APPENDIX G – WILDLIFE

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THREATENED OR ENDANGERED SPECIES SCREENS

Grizzly bears and lynx are the listed species that occur throughout the Butte Field Office. This appendix describes analysis screens developed by a Level 1 team of interagency field biologists to facilitate, streamline, and ensure consistency across administrative boundaries during Section 7 consultation under the Endangered Species Act.

The screens are designed to identify simple, straightforward actions that have insignificant or discountable effects on listed species. If proposed actions are fully compliant with the wildlife screens, and the screen leads to a "not likely to adversely affect" conclusion, they will likely be covered for terrestrial species by a programmatic concurrence from the U.S. Fish and Wildlife Service. These proposed actions could proceed once the appropriate documentation (i.e. biological assessment or worksheet with appropriate documentation) is completed. The screens are not all inclusive because some projects warrant additional analyses from the onset. Furthermore, even though an action is identified in the screen, the standard consultation procedure could still be required. A qualified wildlife biologist is responsible for implementing the screening process.

A wildlife screen is attached for the grizzly bear. Measures identified in the Lynx Conservation and Assessment Strategy (LCAS) will serve as the screen for lynx

The Level 1 team is currently determining the appropriate format documentation procedure for the wildlife screening process. At a minimum, the action agency would be required to submit periodic progress reports for NLAA actions that have been consulted on using the programmatic concurrence.

The following sections provide guidance on how to use the wildlife screens and emphasize when the programmatic concurrence would not apply. If programmatic concurrence does not apply, the standard[1] section 7 process would occur. The process described here follows and compliments the National Fire Plan consultation strategy. The screens developed for the National Fire Plan process consider the effects of certain fire-related projects and may be used to screen all National Fire Plan projects. The screens presented here consider the effects of most other activities.

CONDITIONS APPLICABLE TO ALL SCREENS

The programmatic concurrence applies to Forest Service and BLM projects or actions where the biological assessment clearly leads to a "not likely to adversely affect" (NLAA) determination. Use of the consultation screens is intended to be a tool to arriving at an effects determination; the biologist must consider the effects of the action added to the environmental baseline and cumulative effects. The concurrence is expressly limited to those simple, straightforward actions that will have documentation supporting insignificant or discountable effects on wildlife. More complex projects that do not clearly lead to an NLAA determination or those projects for which the project biologist has any threatened and endangered wildlife species concerns do not qualify for this programmatic concurrence. For these projects, biologists should follow standard consultation processes.

Further, projects not meeting or included in the species-specific criteria are not covered by the programmatic consultation and must follow the standard processes for conducting project analysis, biological assessment development, and consultation. Several activities are not included in the species' screens because the nature of the activity warrants additional consideration provided through standard consultation procedures.

If one species does not meet the screening criteria, then standard consultation procedures need to be followed for all species. However, it is possible to use the screens as a documentation process for those species that fit the screens and include this documentation alongside the analysis for the species that do not fit the screens.

As always, cumulative effects must be considered; cumulative effects findings may cause the project to go to standard consultation.

No Effect determinations are included in the species-specific flowcharts to assist in overall effect determinations even though consultation is not necessary.

Application of the screens and determination of project effects for compliance with Section 7 must be accomplished by a qualified wildlife biologist.

In no case does the programmatic concurrence apply to any project or action that has the potential to cause or increase the likelihood of take as defined by the Service's regulations.

In the event that a project or action proceeds under the programmatic concurrence and exceeds the conditions of the programmatic concurrence, the action agency must initiate informal or formal consultation or request reaffirmation of concurrence, as appropriate, for that project or action.

[1] Standard consultation refers to the process whereby the action agency biologist commences dialogue with U.S. Fish and Wildlife Service (Service) counterparts to determine the appropriate consultation procedures. Typically this involves phone correspondence to apprise the Service of the effects of an ongoing project and to reach consensus on such an effect and to determine if informal consultation is sufficient or if the project should proceed to formal consultation. Upon agreement of the respective consultation procedure, the action agency biologist will submit the appropriate request and documentation to the Service for concurrence or a biological opinion.

GRIZZLY BEAR PROJECT SCREENING ELEMENTS & DETERMINATIONS

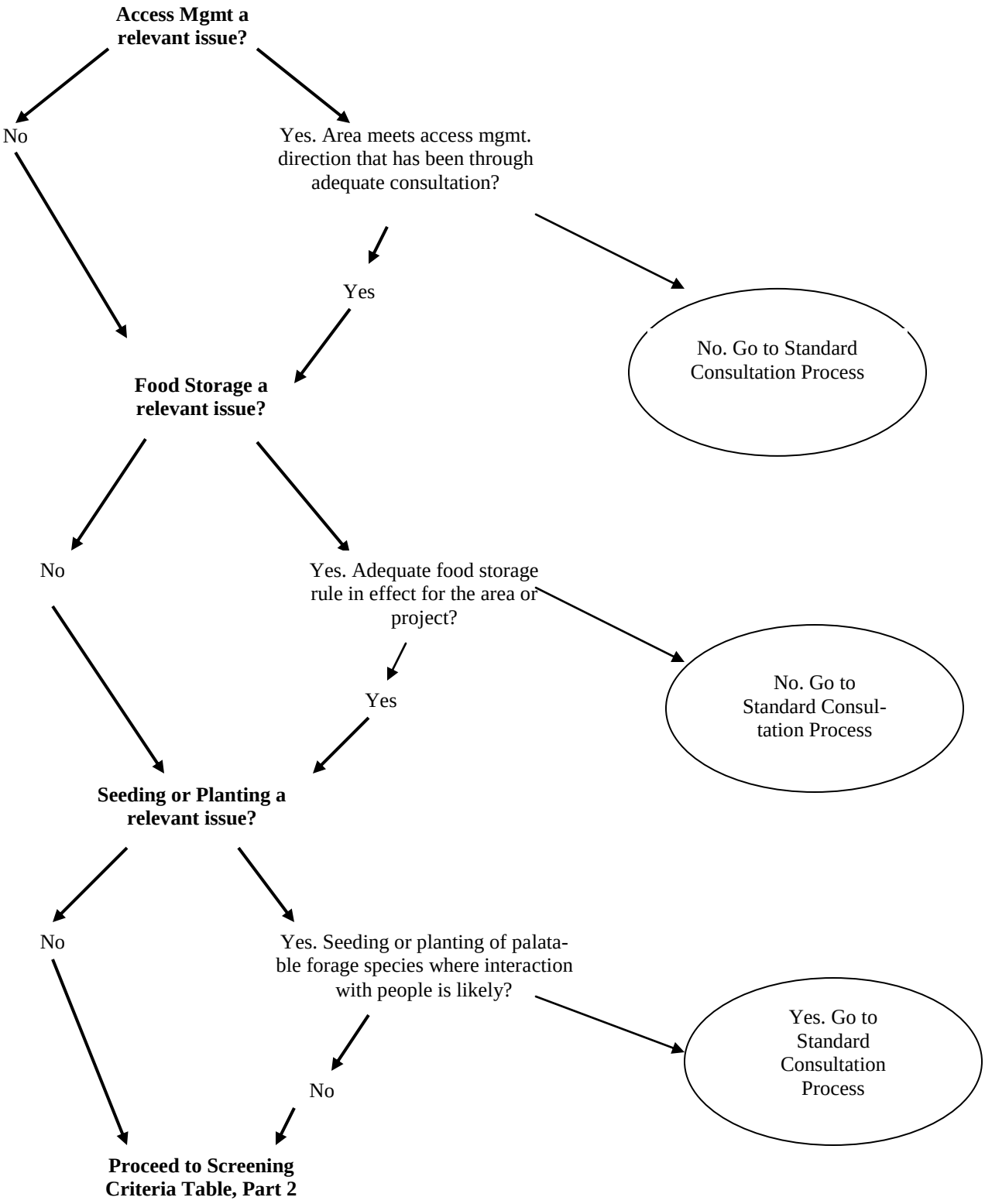
Three considerations are prerequisite to more detailed consideration of other project information and are considered in screening process Part 1. (1) The area must be in compliance with the appropriate access management direction. (2) Human foods, livestock feed, garbage, and other attractants must be managed by the application of an adequate[2] "food storage rule" similar to the NCDE or Yellowstone food storage orders. If no specific rule exists for the area, use of either the Yellowstone or NCDE order will be considered adequate. (3) Projects that involve seeding or planting of grasses, forbs, or shrubs, must do so in a manner that will tend not to attract bears into areas where increased mortality risk or interaction between bears and people is likely.

After access management, food/attractant storage, and seeding/planting of grasses, forbs, or shrubs has been considered in Part 1, only then can other project details be considered in the Screening Criteria Table, Part 2. Table 2 represents a comprehensive activity list. There may be activities that are not included in this Table. For those activities not included and for which there is an effect, follow standard consultation procedures. Also, the Not Likely to Adversely Affect (NLAA) determinations reflects a conservative determination. There may be activities listed as NLAA in Table 2 that upon site-specific analyses warrant a No Effect determination.

Note: The scope of this programmatic biological assessment applies to areas where grizzly bears are expected to occur – not just within Recovery Zone boundaries.

[2]Food shall be attended or stored in a bear resistant manner. For examples of applicable methods of bear resistant storage and definitions for 'attended' review the NCDE or Yellowstone food storage orders.

GRIZZLY BEAR SCREENING PROCESS PART 1



Part 2: The following Screening Criteria Table displays forest activities and criteria, that when met, will allow the project to meet "screening elements". If the project does not meet the identified criteria, the project should proceed through the established consultation process[3].

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
1	**Timber harvest**	Harvest, skidding, and/or hauling of timber products	NA	NA	Potential LAA, go to Standard Consultation process
2	**Healthy Forest Initiative Categorical Exclusions**	Category 12, Limited Timber Harvest: Live Trees – commercial thinning of overly dense stands of trees to improve the health of remaining trees; removing individual trees for forest products or fuel wood	NA	Limited timber harvest of live trees does not exceed 70 acres and there is less than ½ mile of temporary road construction. This is also not allowed in inventoried roadless areas and other specified areas of significance such as grizzly bear core areas.	NLAA
3	**Mechanical**	Off road heavy equip operation, such as site prep, fuel piling, log yarding, etc	NA	NA	Potential LAA, go to Standard Consultation process
		Helicopter use for monitoring, prescribed fire ignition, wildlife relocations, etc	Use includes few trips and ≤2 activities/year and ≤2 days/activity/ analysis area	NA	NLAA
4	**Existing Gravel Pit Use**	Existing gravel pit use for road maintenance, etc.		Use occurs off existing roads only. If on closed roads, use does not exceed administrative use levels	NLAA or NE
5	**Roads and Road Maintenance**	Opening closed road			Potential LAA, go to Standard Consultation process.

[3] References for crew levels and duration of use as well as time frames identified under Screening Criteria include: CEM – A model for assessing effects on grizzly bears, 1990; Response to peer review of the A19 and proposed approach to managing access in grizzly bear habitat, NCDE Technical Group 1/24/01; and Draft, Rationale and choices made in the review and development of an access direction proposal for the NCDE grizzly bear ecosystem, 11/24/98.

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
		Reclaiming road outside of riparian/ spring habitat	Use is ≤ 14 consecutive days		NLAA
		Reclaiming road in riparian/spring habitat		Project occurs between July 1 through March 31	NLAA
		Reclaiming road		Does not meet administrative use levels, or occurs in riparian/spring habitat and active during 4/1-6/30	Potential LAA, go to Standard Consultation process
		Road maintenance: blading, culvert cleaning, brushing, etc		Road is open, or use meets administrative use criteria	NLAA
		New road construction	Construction is ≤ 14 consecutive days	≤ ½ mile temporary road construction. If in riparian or spring habitat, new road construction occurs between July 1 and March 31	NLAA
		Bridge or stream culvert replacement		Project occurs between July 1 through March 31 or completed in ≤1 day	NLAA
6	**Silviculture Activities**	Reforestation hand planting	Day use only or camping of ≤20 individuals and ≤5 days/analysis area	Does not include snow plowing for access	NLAA
		Reforestation mechanical treatments	NA	NA	Potential LAA, go to Standard Consultation process.
		Insect suppression Aerial chemical application	NA	Chemicals do not effect cutworm moth and honeybee or their habitats	NLAA
		Insect suppression Aerial chemical application	NA	Chemicals affect cutworm moth or habitat, and in moth habitat	Potential LAA, go to Standard Consultation process
		Insect suppression ground chemical application	NA	NA	NLAA
		Insect suppression survey, fertilization, manual treatment, individual tree fire treatment, or pheromone treatment	NA	NA	NLAA
		Precommercial thinning and long term (>1 year) commercial Christmas tree			Potential LAA, go to Standard Consulta-

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
		harvest			tion process
		Disease control – manual treatment of larch through girdling to control larch mistletoe	NA	NA	NLAA
7	**Range**	Infrastructure development	NA	NA	NLAA
		Grazing		Maintains or reduces existing livestock grazing or changes livestock class to a less vulnerable spp, and no history of depredation or control actions	NLAA
		Grazing		Increases livestock grazing, introduces new grazing into areas where depredation more likely, or history of livestock depredation	Potential LAA, go to Standard Consultation process
8	**Recreation**	Trail maintenance or reconstruction	NA	Results in increased use or change of user type	Potential LAA, go to Standard Consultation process
		Trail maintenance or reconstruction		Does not result in increase in use or change in user type	NLAA
		New Trail construction			Potential LAA, go to Standard Consultation process
		Facility operations, including developed and dispersed camping		Educate public campers and enforce sanitation standards. Does not increase use or change user type.	NLAA
				Sanitation standards are not enforced or use is increased or user type is changed.	Potential LAA, go to Standard Consultation process

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
9	**Forest Products**	Personal use firewood collection, annual Christmas tree cutting, berry picking, low/incidental mushroom picking, and collection of "other forest products" (such as bear grass greens, medicinal herbs, pachistima, etc)		Does not include off road mechanical skidding or hauling. Include "bear aware" education message	NLAA
		Commercial firewood collection, berry picking, and "other forest products" (such as bear grass greens, medicinal herbs, pachistima, etc), but does not include mushrooms.	Day use only or camping of ≤20 individuals and ≤5 days total/analysis area	Does not include off road mechanical skidding or hauling. Enforce sanitation standards, and Include "bear aware" education message.	NLAA
10	**Habitat Restoration**	See timber harvest, mechanical treatments, roads, weed control, and prescribed fire. Also includes monitoring, fencing, fish barrier development, fish spp removal/trapping, rotenone treatment, interpretation/Con Ed, meadow restoration, riparian planting and restoration, snag creation, and water source development.	Day use only or camping of ≤20 individuals and ≤5 days/analysis area	Project occurs between July 1 through March 31 or completed in ≤1 day in riparian areas. Project does not result in an increase in public use or user type.	NLAA
11	**Prescribed Fire**	General support, ignition, mop-up	Day use only or camping of ≤20 individuals for ≤5 days/analysis area	Does not include riparian areas	NLAA
		Fire line construction	Same as support	Fire line does not/will not function as a road or trail and will be reclaimed after the fire.	NLAA
		Defensible space treatments (within 100m of structure) (Cohen 2000)	Same as support	Planting and/or seeding does not include palatable forage spp.	NLAA

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
12	**Watershed Restoration**	Includes erosion control structures, sediment control, monitoring. Also, see reforestation, timber harvest, mechanical treatments, etc.	Day use only or camping of ≤20 individuals and ≤5 days/analysis area	Project occurs between July 1 through March 31 or completed in ≤1 day	NLAA
13	**Weed Management**	Chemical, aerial or ground application	NA	NA	NLAA
		Sheep or goat grazing	NA	NA	Potential LAA, go to Standard Consultation process
14	**Non-recreational Special Uses**	This includes maintenance of existing sites, corridors, or other facilities and is often carried out by the entity that owns the structures or facilities	NA	Meets administrative use levels	NLAA
		New construction of facilities – this includes microwaves, cell towers, substation communications, powerlines, etc.	NA	Construction of powerlines is ≤ ½ mile and includes vegetation clearing. Includes ≤ ½ mile of temporary road construction. Roads are not constructed in spring habitat between April 1 and June 30.	NLAA
15	**Miscellaneous**	Similar activity component, but must meet all screening criteria in parts 1 and 2 of the screens table and not violate any of these criteria.			NE or LNAA

LYNX PROJECT SCREENING ELEMENTS & DETERMINATIONS[4]

The lynx screen is a two-part process. Projects are initially screened through the Part 1 Flow Chart to determine whether they are carried forward into Part 2 or if standard consultation procedures need to be followed. Part 2 consists of two different tables, D1 and D2. Table D1 is composed of those activities described in the LCAS. Table D2 consists of projects that are not identified in the LCAS but that may be implemented as part of program of work and as such need to be analyzed for effects to listed species.

Table D2 is a based on the consultation that was completed when the lynx was listed in 2000 and through ongoing project analysis. As such, we retained the *"no effect"* determination in these screens as a general guideline for use by project biologists.

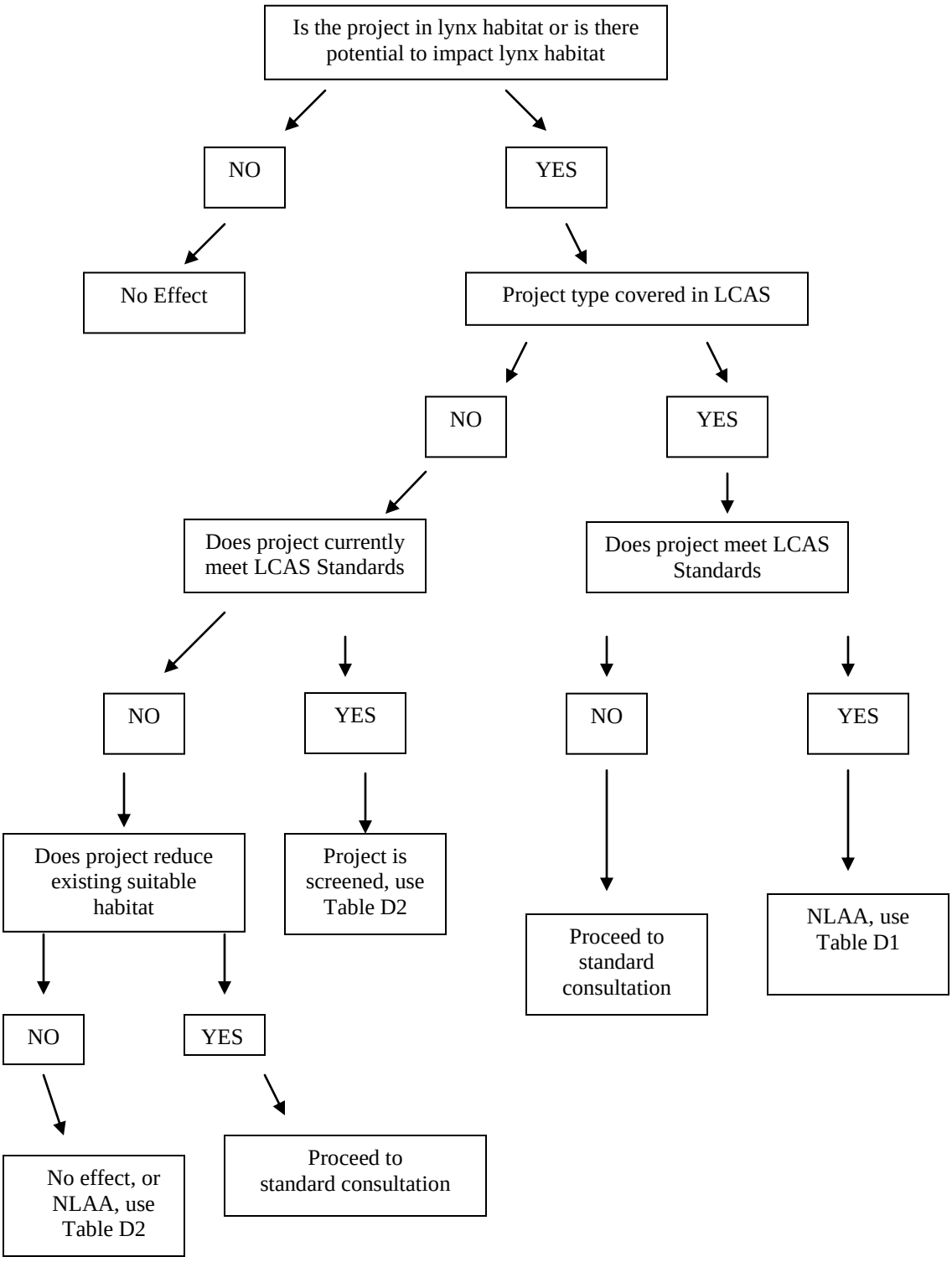
Applicable to both Tables, the *Not Likely to Adversely Affect* (NLAA) determinations reflect a conservative determination. There may be activities listed as NLAA that upon site specific analyses warrant a No Effect determination.

[4] Screening elements apply to projects that are in lynx habitat that are within a lynx analysis unit.

Refer to the Lynx Conservation Assessment and Strategy for a definition of lynx habitat

LYNX SCREENS

PART 1



LYNX SCREENS, PART 2 (Tables D1 and D2)

Table D1. Screening criteria for projects included in the Lynx Conservation and Assessment Strategy

#	Activity Type	Activity Component	Screening Criteria	Determination
1	**Timber Harvest (from LCAS)**	Felling, skidding, and/or hauling of timber products (not including salvage harvest). Includes post sale prescribed fire (slash, broadcast burning, etc.)	Management actions shall not change more than 15% of lynx habitat within a LAU to an unsuitable condition within a 10-year period; no more than 30% of lynx habitat within an LAU will be in unsuitable condition; greater than 10% denning habitat remains after the project; habitat connectivity is maintained	Proceed to standard consultation
	(From LCAS)	Salvage harvest (in this case, salvage harvest of blowdown)	Affected area is greater than or equal to 5 acres OR denning habitat has been field verified and comprises more than 10% of lynx habitat within an LAU and will be well-distributed after salvage harvest	Proceed to standard consultation
2	**Healthy Forest Initiative Categorical Exclusions or similar project meeting these and screening criteria in #1**	Category 12, Limited Timber Harvest: Live Trees – commercial thinning of overly dense stands of trees to improve the health of remaining trees; removing individual trees for forest products or fuelwood	Area does not exceed 70 acres and there is no more than ½ mile of temporary road construction (and meets screening criteria in #1 above)	NLAA
		Category 13, Salvage of Dead and Dying Trees – Salvage harvest in areas where trees have been severely damaged by forces such as fire, wind, ice, insects, or disease and still have some economic value	Area does not exceed 250 acres and there is no more than ½ mile of temporary road construction	NLAA
		Category 14, Tree Removal to Prevent Spread of Insect/Disease – Commercial and non-commercial felling and removal of any trees necessary to control the spread of insects and disease	Area does not exceed 250 acres and there is no more than ½ mile of temporary road construction	NLAA
3	**Roads and Road Maintenance**	Highways	Highway crossings are identified that reduce highway impacts on lynx. This screening element refers to actual projects that involve the creation of highway crossings to facilitate lynx movement.	Proceed to standard consultation

#	Activity Type	Activity Component	Screening Criteria	Determination
		Non-recreation motorized winter access	Over-snow access is restricted to designated routes	NLAA
4	**Silviculture Activities**	Precommercial thinning	Precommercial thinning occurs in stands that no longer provide snowshoe hare habitat	NLAA
5	**Range**	Livestock grazing in post-fire and post-harvest areas	Livestock use is delayed in these created openings until successful regeneration of the shrub and tree component occurs	NLAA
		Livestock grazing in aspen stands	Aspen stands are managed to ensure sprouting and survival sufficient to perpetuate long-term viability of the clones	NLAA
		Livestock grazing in shrub-steppe habitats	Shrub-steppe habitats are managed to maintain or achieve mid-seral or higher condition to provide lynx habitat matrix	NLAA
		Livestock grazing in riparian areas or willow carrs	Livestock grazing is managed to maintain or achieve mid-seral or higher condition to provide cover and forage for prey species	NLAA
6	**Recreation**	Snowmobiling and other over-the-snow activity such as cross country skiing, snowshoe races, and dogsledding	No net increase in groomed or designated over-the-snow routes for any winter activity and snowmobile play areas by LAU (see definition of 'designated' 5/19/2002 McAllister letter with Clarification and Revised Definitions, p.2)	NLAA
		Developed Recreation including planning and operating new or expanded recreation developments	Landscape connectivity is not compromised; trails, roads, and lift termini are designed to direct winter use away from diurnal security areas; key linkage areas are provided for landscape connectivity	NLAA
7	**Prescribed Fire**	All activity components	Burn prescriptions are designed to regenerate or create snowshoe hare habitat	NLAA

Table D2. Screening criteria for projects not included in the Lynx Conservation and Assessment Strategy

#	Activity Type	Activity Component	Screening Criteria		Determination
1	**Roads and Road Maintenance**	Road Maintenance - This includes general road maintenance that may involve the brushing of vegetation on the road or along roadsides. Road maintenance may include but is not limited to roadbed blading, brushing, cleaning ditches, replacing or cleaning culverts, cleaning dips, or spot graveling.	Brushing included		NLAA
			No brushing associated with activity		NE
		Road Decommissioning - This involves the use of heavy equipment and includes obliteration and other methods to hydrologically neutralize the road.			NLAA
		General Road Use - This includes hauling timber, removing mining waste and materials, and moving livestock over federal roads for which permits are required. It also includes routine road use by administrative units to carry out work associated with recreation, range, timber and minerals management, fire prevention and suppression, inventories, surveys, and other monitoring activities. This includes use of roads consistent with existing travel plans.	Activity includes right-of-ways, multiple dwelling construction, or development of large corporate lands		Proceed to Standard Consultation
			Activity occurs in winter and does NOT include right-of-ways, multiple dwelling construction, or development of large corporate lands		NLAA
			Activity occurs in spring, summer, or fall and does NOT include right-of-ways, multiple dwelling construction, or development of large corporate lands		NE
2	**Silvicultural Activities**	Tree planting	Tree planting does not result in stand type conversion. Activity does not involve snowplowing		NE
		Disease control – manual treatment of larch through girdling to control larch mistletoe	Activity does not involve snowplowing		NLAA
3	**Recreation**	Recreation Special Uses - This includes activities for which permits are issued and includes outfitting and permits issued to a variety of organizations that engage in activities such as mountaineering, rock climbing, outward bound, ski races, concerts, “Poker Runs”, “Fun Runs”, driving tours, nature watch hikes, hunting, fishing, and a wide variety of other events.	Activity is consistent with existing access management from Forest and Travel Plans and is consistent with the LCAS	Activity occurs in Spring, Summer, Fall	NE
				Activity involves hunting mountain lions with dogs	NLAA
				Activity occurs in winter	NLAA

#	Activity Type	Activity Component	Screening Criteria	Determination
		Trail Use consistent with existing travel management	Activity occurs in winter, meets LCAS	NLAA
			Activity occurs in spring, summer, or fall	NE
		Maintenance and/or Minor Trail Re-routes - This consists of maintenance of trails and minor trail re-routes and may require use of heavy equipment.	Activity does not involve blasting	NE
		New Trail Construction and/or Major Trail Re-routes and Maintenance - This includes the development of new trails used for foot, stock, or motorcycles and may require the use of heavy equipment or hand tools and may create a clearing width up to 10 feet wide (FSH 2309.18). This also includes major re-routing and may require use of heavy equipment and/or blasting.		NLAA
		Camping – Includes dispersed and developed campgrounds	Consistent with existing travel plans and LCAS and occurs during spring, summer, or fall	NE
		Dispersed off-road activities	Consistent with existing travel plans and LCAS	NLAA
		Permitted and Non-permitted use of Developed Sites, Facilities, and Their Maintenance - This includes special use permits issued for facilities, residences, and other structures. Permits are also issued for organizational camps such as the Boy Scouts and church groups at developed campgrounds. Other facilities include but are not limited to campgrounds, rental cabins, watchable wildlife sites, picnic areas, warming huts, and communication sites. Also includes Forest Service administrative sites and their maintenance (e.g. campgrounds, trailheads, ranger stations, etc.)	Activity occurs or is associated with ski areas	Proceed to Standard Consultation
			Activity occurs during the winter	NLAA
			Activity occurs during spring, summer, or fall	NE
4	**Forest Products**	Post and Pole Sales – This includes both commercial and non-commercial post and pole sales. This typically occurs in forested stands consisting of trees 5-9” diameter at breast height (dbh).	LCAS habitat criteria are met within the respective LAU (i.e. activity occurs in dense stands where low live limbs are generally out of reach for snowshoe hare).	NLAA

#	Activity Type	Activity Component	Screening Criteria	Determination
		Firewood Collection - This includes both commercial and non-commercial collection and involves the collection of standing dead or down wood.	LCAS habitat criteria are met within the respective LAU	NLAA
		Other Forest Products – This includes but is not limited to berry, mushroom, and bear grass collection and includes both commercial and non-commercial activities. Collection of tree products is not included.	LCAS habitat criteria are met within the respective LAU	NE
		Christmas Tree/Bough Cutting - This includes both commercial and non-commercial cutting. The trees cut range from 3" to 5" dbh and are less than 25' tall.	LCAS habitat criteria are met within the respective LAU. Stand must not be converted to unsuitable snowshoe hare habitat. See Lynx Conservation Assessment and Strategy for a definition of 'unsuitable' habitat.	NLAA
5	**Habitat Restoration**	Forest and Shrub/Grassland Habitat Management - This includes aspen rejuvenation, shrub field maintenance and other types of ecosystem 'driven' projects designed to promote natural processes in an area.	LCAS habitat criteria are met within the respective LAU	NLAA
6	**Noxious Weed Management**	This includes chemical and biological treatments to noxious weeds within or adjacent to lynx habitat	Activity includes aerial application	NLAA
			Activity includes only ground application (no aerial application)	NE
7	**Other Special Uses**	This includes maintenance of existing sites, corridors, or other facilities and is often carried out by the entity that owns the structures or facilities. Maintenance may include vegetation blading or cutting, or spraying to reduce brush and reduce the invasion of shrubs and trees among other activities.		NLAA
8	**Mining and Gravel Pits**	Quarries, recreational mining, small mines, and reclamation of small mines	Mines and gravel pits <5 acres, no winter time operation	NLAA or NE

#	Activity Type	Activity Component	Screening Criteria	Determination
9	**Ditches and Diversions**			NE
10	**Surveys**	Surveys – This includes snow course surveys, track counts, habitat sampling, hair posts, remote camera stations, and radio telemetry among other methods.	Operations are during winter and include repeated snow compaction activities(cross country ski trips, snowmobile trips) on ungroomed trails generally not being used by public	NLAA
			Operations are during spring, summer, or fall	NE
11	**Miscellaneous**	Similar activity component, but must meet all screening criteria in parts 1 and 2 of the screens table and not violate any of these criteria		NE or LNAA

CONSULTATION SUMMARY SHEET FOR PROGRAMMATIC ASSESSMENT

CONSULTATION SUMMARY SHEET *INSTRUCTIONS* FOR PROGRAMMATIC BIOLOGICAL ASSESSMENT

Summary sheets will be filled out by Project Biologists and reviewed by Forest Biologists. Project Biologists will submit summary sheets to Forest Biologists on a project-by-project basis. Forest Biologists will submit summary sheets, with one project per sheet, to the U.S. Fish and Wildlife Service quarterly and, as needed, these projects will be reviewed and discussed by the Level One Team to ensure the screening criteria are adequately interpreted and applied. There will be a random audit of a few projects each year to insure compliance and effectiveness of the screens and reporting requirements.

Page ___ of ___

Administrative Unit: _____

Contact: _____***Project Biologist***_____

Reviewed by: _____***Forest Biologist***_____

Date: _____

Project Name and Description	Species	Effects of Action	Cumulative Effects (ESA)	How does the project meet screening criteria?	Determination of Effects
Project description should provide pertinent information including all aspects of the project that potentially affect T&E species. This includes but is not limited to: project name, project location including management unit if applicable, timing of implementation and details of project activities.	**Grizzly Bear**	Briefly describe the overall effect for the entire project on the species and base it on the screening criteria.	Briefly describe the effects of future, non-federal actions that are reasonably likely to occur in the action area (this is the area where the effects of the project may be felt).	Specifically identify the screening criteria and describe how the project meets these specific criteria.	• No Effect • May affect not likely to adversely affect
	Canada Lynx				

CONSULTATION SUMMARY SHEET FOR PROGRAMMATIC BIOLOGICAL ASSESSMENT

Page ___ of ___

Administrative Unit: _____

Contact: _____

Reviewed by: _____

Date: _____

Project Name and Description	Species	Effects of Action	Cumulative Effects (ESA)	How does the project meet screening criteria?	Determination of Effects
	Grizzly Bear				
	Lynx				

LYNX CONSERVATION ASSESSMENT AND STRATEGY (LCAS) SUMMARY AND LYNX CONSERVATION MEASURES

The BLM and FWS signed a Conservation Agreement to promote the conservation of the Canada lynx and its habitat on BLM lands, using the Lynx Science Report and the Lynx Conservation and Assessment Strategy. The LCAS was developed in place of the normal recovery plan previously used for most other species listed under ESA.

The agreement and strategy identify objectives, standards, guidelines, and conservation measures to reduce or eliminate risk factors. These measures are intended to conserve the lynx, and to reduce or eliminate adverse effects from the spectrum of management activities on federal lands. These measures are provided to assist federal agencies in seeking opportunities to benefit lynx and to help avoid negative impacts through the thoughtful planning of activities. Plans that incorporate them, and projects that implement them, are generally not expected to have adverse effects on lynx, and implementation of these measures across the range of the lynx is expected to lead to conservation of the species.

Critical habitat for the Canada Lynx was not designated through the listing process. The LCAS instead relies on defining potential habitat based on vegetation characteristics and prey availability wherever that may occur since current lynx populations are small and widely dispersed. Conservation focus is to:

- Manage forested habitat within the historic range of variability for vegetation, and maintain large unfragmented blocks of forest with the appropriate structure;
- Maintain dense understory conditions providing cover and forage for snowshoe hares as the primary lynx prey base;
- Minimize snow compaction that would encourage access for competing predators into lynx habitat; and
- Provide connections within and between lynx habitat areas, emphasizing riparian habitats.

CONSERVATION MEASURES APPLICABLE TO ALL PROGRAMS AND ACTIVITIES

Because it is impossible to provide standards and guidelines to address all possible actions in all locations across the broad range of the lynx, it is imperative that project specific analysis and design be completed for all actions that have the potential to affect lynx. Circumstances unique to individual projects or actions and their locations may still result in adverse effects on lynx. In these cases, additional or modified mitigating measures may be necessary to avoid or minimize adverse effects.

Programmatic Planning - Objectives

Design vegetation management strategies that are consistent with historical succession and disturbance regimes. The broad-scale strategy should be based on a comparison of historical and current ecological processes and landscape patterns, such as age-class distributions and patch size characteristics. It may be necessary to moderate the timing, intensity, and extent of treatments to maintain all required habitat components in lynx habitat, to reduce human influences on mortality risk and interspecific competition, and to be responsive to current social and ecological constraints relevant to lynx habitat.

Programmatic Planning - Standards

1. Conservation measures will generally apply only to lynx habitat on federal lands within LAUs.

2. To facilitate project planning, delineate LAUs. To allow for assessment of the potential effects of the project on an individual lynx, LAUs should be at least the size of area used by a resident lynx and contain sufficient year-round habitat.

3. To be effective for the intended purposes of planning and monitoring, LAU boundaries will not be adjusted for individual projects, but must remain constant.

4. Lynx habitat will be mapped using criteria appropriate to each geographic area.

5. Prepare a broad-scale assessment of landscape patterns that compares historical and current ecological processes and vegetation patterns, such as age-class distributions and patch size characteristics. In the absence of guidance developed from such an assessment, limit disturbance within each LAU as follows: if more than 30 percent of lynx habitat within a LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of vegetation management activities by federal agencies.

Programmatic Planning - Guidelines

1. The size of LAUs should generally be 6,500- 10,000 ha (16,000 – 25,000 acres or 25-50 square miles) in contiguous habitat, and likely should be larger in less contiguous, poorer quality, or naturally fragmented habitat. Larger units should be identified in the southern portions of the Northern Rocky Mountains Geographic Area (in Idaho from the Salmon River south, Oregon, Wyoming, and Utah) and in the Southern Rocky Mountains Geographic Area.

In the west, we recommend using watersheds (e.g., 6th code hydrologic unit codes (HUCs) in more northerly portions of geographic areas, and 5th code HUCs in more southerly portions). In the east, terrestrial ecological units that have been delineated at the land type association or subsection level (e.g., LTAs or whatever scale most closely approximates the size of a lynx home range) may be an appropriate context for analysis. Coordinate delineation of LAUs with adjacent administrative units and state wildlife management agencies, where appropriate.

2. After LAUs are identified, their spatial arrangement should be evaluated. Determine the number and arrangement of contiguous LAUs needed to maintain lynx habitat well distributed across the planning area. LAUs with only insignificant amounts of lynx habitat may be discarded, or portions of the unit combined with or divided among neighboring LAUs to provide a meaningful unit for analysis.

Project Planning - Standards

1. Within each LAU, map lynx habitat. Identify potential denning habitat and foraging habitat (primarily snowshoe hare habitat, but also habitat for important alternate prey such as red squirrels), and topographic features that may be important for lynx movement (primary ridge systems, prominent saddles, and riparian corridors). Also identify non-forest vegetation (meadows, shrub-grassland communities, etc.) adjacent to and intermixed with forested lynx habitat that may provide habitat for alternate lynx prey species.

2. Within a LAU, maintain denning habitat in patches generally larger than 5 acres, on at least 10 percent of the area that is capable of producing stands with these characteristics. Where less than 10 percent of the forested lynx habitat within a LAU provides denning habitat, defer those management actions that would delay achievement of denning habitat structure.

3. Maintain habitat connectivity within and between LAUs.

CONSERVATION MEASURES TO ADDRESS RISK FACTORS AFFECTING LYNX PRODUCTIVITY

TIMBER MANAGEMENT IN LYNX HABITAT

Timber management modifies the vegetation structure and mosaic of forested landscapes. Timber management can be used in conjunction with, or in place of, fire as a disturbance process to create and maintain snowshoe hare habitat. In the southern portion of its range, lynx populations appear to be limited by the availability of snowshoe hare prey, as suggested by large home range sizes, high kitten mortality due to starvation, and greater reliance on alternate prey, especially red squirrels, as compared with populations in northern Canada. Timber management practices should be designed to maintain or enhance habitat for snowshoe hare and alternate prey such as red squirrel. Dense horizontal cover of conifers, just above the snow level in winter, is critical for snowshoe hare habitat. This structure may occur either in regenerating seedling/sapling stands, or as an understory layer in older stands.

Most aspen stands in the Rocky Mountains are in late successional condition as a result of past fire prevention and grazing. In aspen stands intermixed with spruce-fir forests, particularly in southern Idaho, southern Montana, Wyoming, Utah, and Colorado, treatments that result in dense regeneration of aspen are likely to enhance habitat for potential prey of lynx.

Programmatic Planning - Objectives

1. Evaluate historical conditions and landscape patterns to determine historical vegetation mosaics across landscapes through time. For example, large infrequent disturbance events may have been more characteristic of lynx habitat than small frequent disturbances.

2. Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes.

3. If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat, adjust management practices to produce forest composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes.

Project Planning - Objectives

1. Design regeneration harvest, planting, and thinning to develop characteristics suitable for snowshoe hare habitat.

2. Design project to retain/enhance existing habitat conditions for important alternate prey (particularly red squirrel).

Project Planning - Standards

1. Management actions (e.g., timber sales, salvage sales) shall not change more than 15 percent of lynx habitat within a LAU to an unsuitable condition within a 10-year period.

2. Following a disturbance such as blowdown, fire, insects, and disease that could contribute to lynx denning habitat, do not salvage harvest when the affected area is smaller than 5 acres; exceptions would include areas such as developed campgrounds. Where larger areas are affected, retain a minimum of 10% of the affected area per LAU in patches of at least 5 acres to provide future denning habitat. In such areas, defer or modify management activities that would prevent development or maintenance of lynx foraging habitat.

3. In lynx habitat, pre-commercial thinning will be allowed only when stands no longer provide snowshoe hare habitat (e.g., self-pruning processes have eliminated snowshoe hare cover and forage availability during winter conditions with average snowpack).

4. In aspen stands within lynx habitat in the Cascade Mountains, Northern Rocky Mountains and Southern Rocky Mountains Geographic Areas, apply harvest prescriptions that favor regeneration of aspen.

Project Planning - Guidelines

1. Plan regeneration harvests in lynx habitat where little or no habitat for snowshoe hares is currently available, to recruit a high density of conifers, hardwoods, and shrubs preferred by hares. Consider the following:

   a) Design regeneration prescriptions to mimic historical fire (or other natural disturbance) events, including retention of fire-killed dead trees and coarse woody debris;

   b) Design harvest units to mimic the pattern and scale of natural disturbances and retain natural connectivity across the landscape. Evaluate the potential of riparian zones, ridges, and saddles to provide connectivity; and

   c) Provide for continuing availability of foraging habitat in proximity to denning habitat.

2. In areas where recruitment of additional denning habitat is desired, or to extend the production of snowshoe hare foraging habitat where forage quality and quantity is declining due to plant succession, consider improvement harvests (commercial thinning, selection, etc). Improvement harvests should be designed to:

   a) Retain and recruit the understory of small diameter conifers and shrubs preferred by hares;

   b) Retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and

   c) Maintain or improve the juxtaposition of denning and foraging habitat.

WILDLAND FIRE MANAGEMENT

Wildland fire and insects have historically played the dominant role in maintaining a mosaic of forest successional stages in lynx habitat. Stand-replacing fires were infrequent and affected large areas. In areas with a mixed fire regime, moderate to low intensity fires also occurred in the intervals between stand-replacing events. Refer to the geographic area descriptions for more detailed information regarding historical fire regimes.

Periodic vegetation disturbances maintain the snowshoe hare prey base for lynx. In the period immediately following large stand-replacing fires, snowshoe hare and lynx densities are low. Populations increase as the vegetation grows back and provides dense horizontal cover, until the vegetation grows out of the reach of hares. Low to moderate intensity fires may also stimulate understory development in older stands.

Fire exclusion may have altered the pattern and composition of vegetation in subalpine forests. In the western United States, particularly in the southern portion of the Northern Rocky Mountains Geographic Area and in the Southern Rocky Mountains Geographic Area, fire exclusion is one of the primary factors contributing to the decline or loss of aspen. Aspen communities occupy a small percentage of the total forested area, but they provide important habitat diversity. Aspen/tall forb community types, especially those that include snowberry, serviceberry and chokecherry shrubs in the understory, are very productive and may contribute to the quality of lynx foraging habitat.

Wildland fire management activities include suppression and pre-suppression activities, as well as prescribed fire (natural and management ignitions).

Programmatic Planning - Objectives

1. Restore fire as an ecological process. Evaluate whether fire suppression, forest type conversions, and other forest management practices have altered fire regimes and the functioning of ecosystems.

2. Revise or develop fire management plans to integrate lynx habitat management objectives. Prepare plans for areas large enough to encompass large historical fire events.

3. Use fire to move toward landscape patterns consistent with historical succession and disturbance regimes. Consider use of mechanical pre-treatment and management ignitions if needed to restore fire as an ecological process.

4. Adjust management practices where needed to produce forest composition, structure, and patterns more similar to those that would have occurred under historical succession and disturbance regimes.

5. Design vegetation and fire management activities to retain or restore denning habitat on landscape settings with highest probability of escaping stand-replacing fire events. Evaluate current distribution, amount, and arrangement of lynx habitat in relation to fire disturbance patterns.

Project Planning - Objectives

1. Use fire as a tool to maintain or restore lynx habitat.

2. When managing wildland fire, minimize creation of permanent travel ways that could facilitate increased access by competitors.

Project Planning - Standards

1. In the event of a large wildfire, conduct a post-disturbance assessment prior to salvage harvest, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.

2. Design burn prescriptions to regenerate or create snowshoe hare habitat (e.g., regeneration of aspen and lodgepole pine).

Project Planning - Guidelines

1. Design burn prescriptions to promote response by shrub and tree species that are favored by snowshoe hare.

2. Design burn prescriptions to retain or encourage tree species composition and structure that will provide habitat for red squirrels or other alternate prey species.

3. Consider the need for pre-treatment of fuels before conducting management ignitions.

4. Avoid constructing permanent firebreaks on ridges or saddles in lynx habitat.

5. Minimize construction of temporary roads and machine fire lines to the extent possible during fire suppression activities.

6. Design burn prescriptions and, where feasible, conduct fire suppression actions in a manner that maintains adequate lynx denning habitat (10% of lynx habitat per LAU).

RECREATION MANAGEMENT

Lynx have evolved a competitive advantage in environments with deep soft snow that tends to exclude other predators during the middle of winter, a time when prey is most limiting (Murray and Boutin 1991, Livaitis 1992, Buskirk et al. 1999). Widespread human activity (snowshoeing, cross-country skiing, snowmobiling, snow cats) may lead to patterns of snow compaction that make it possible for competing predators such as coyotes and bobcats to occupy lynx habitat through the winter, reducing its value to and even possibly excluding lynx (Bider 1962, Ozoga and Harger 1966, Murray et al. 1995, O'Donoghue et al. 1998). In order to maintain a competitive advantage for lynx, it may be necessary to minimize or even preclude snow compacting activities in and around quality snowshoe hare habitat. To not do so may lead to the elimination of lynx, or preclude the ability to re-establish them, in these landscapes.

A consideration for lynx in winter landscapes is exploitation or interference competition from other predator/competitors (Buskirk et al. 1999) and human disturbance (e.g., large developed recreational sites or areas of concentrated winter recreational use). Lynx may be able to adapt to the presence of regular and concentrated recreational use, so long as critical habitat needs are being met. Therefore it is essential that an interconnected network of foraging habitat be maintained that is not subjected to widespread human intervention or competition from other predator species.

In areas of concentrated recreational use (e.g., large ski areas), it may be necessary to maintain or provide "diurnal security habitat". In landscapes where there is widespread or intense recreational use, the natural diurnal patterns of human and lynx activity may provide the opportunity to maintain both uses in the landscape. Most human activity occurs during daylight hours, while lynx appear to be most active dusk to dawn, although weather may affect the time period when lynx are most active (Apps 1999). A key to providing temporal segregation of use may be in ensuring there are places in that landscape were lynx can bed during the day relatively undisturbed. Sites that are similar to denning habitat (i.e., areas that are tangled with large woody debris) will tend to exclude most human activity because of the inherent difficulty they pose for human movement. Diurnal security habitat should be sufficiently large to provide effective and visual insulation from human activity, and must be well distributed and in proximity to foraging habitat.

Where such diurnal security sites exist, they should be protected from actions or activities that would destroy or compromise their functional value. In landscapes where these areas are lacking or inadequate, it may be desirable to create them, focusing on location, adequate size, and an abundance of jackstrawed large woody debris.

Landscape connectivity may be provided by narrow forested mountain ridges, plateaus, or forest stringers that

link more extensive areas of lynx habitat. Woodland riparian communities that provide travel cover across otherwise open areas may also provide connectivity.

Minimizing disturbance around denning habitat is important from May to August.

Programmatic Planning - Objectives

1. Plan for and manage recreational activities to protect the integrity of lynx habitat, considering as a minimum the following:

   a) Minimize snow compaction in lynx habitat.

   b) Concentrate recreational activities within existing developed areas, rather than developing new recreational areas in lynx habitat.

   c) On federal lands, ensure that development or expansion of developed recreation sites or ski areas and adjacent lands address landscape connectivity and lynx habitat needs.

Programmatic Planning - Standards

1. On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. This is intended to apply to dispersed recreation, rather than existing ski areas.

2. Map and monitor the location and intensity of snow compacting activities (for example, snowmobiling, snowshoeing, cross-country skiing, dog sledding, etc.) that coincide with lynx habitat, to facilitate future evaluation of effects on lynx as information becomes available.

Programmatic Planning - Guidelines

1. Provide a landscape with interconnected blocks of foraging habitat where snowmobile, cross-country skiing, snowshoeing, or other snow compacting activities are minimized or discouraged.

2. As information becomes available on the impact of snow-compacting activities and disturbance on lynx, limit or discourage this use in areas where it is shown to compromise lynx habitat. Such actions should be undertaken on a priority basis considering habitat function and importance.

Project Planning - Standards

Developed Recreation:

1. In lynx habitat, ensure that federal actions do not degrade or compromise landscape connectivity when planning and operating new or expanded recreation developments.

2. Design trails, roads, and lift termini to direct winter use away from diurnal security habitat.

Dispersed Recreation:

To protect the integrity of lynx habitat, evaluate (as new information becomes available) and amend as needed, winter recreational special use permits (outside of permitted ski areas) that promote snow compacting activities in lynx habitat.

Project Planning - Guidelines

Developed Recreation:

1. Identify and protect potential security habitats in and around proposed developments or expansions.

2. When designing ski area expansions, provide adequately sized coniferous inter-trail islands, including the retention of coarse woody material, to maintain snowshoe hare habitat.

3. Evaluate, and adjust as necessary, ski operations in expanded or newly developed areas to provide nocturnal foraging opportunities for lynx in a manner consistent with operational needs, especially in landscapes where lynx habitat occurs as narrow bands of coniferous forest across the mountain slopes.

FOREST/BACKCOUNTRY ROADS AND TRAILS

Forest and backcountry roads and trails are those that occur on public lands; highways are addressed separately. Refer also to the conservation measures in the Forest Management, Recreation, and Trapping sections.

Plowed roads and groomed over-the-snow routes may allow competing carnivores such as coyotes and mountain lions to access lynx habitat in the winter, increasing competition for prey (Buskirk et al. 1999). However, plowed or created snow roads may be necessary to accomplish winter logging, which may be desirable to meet a variety of resource management objectives.

Preliminary information suggests that lynx may not avoid roads, except at high traffic volumes. Therefore, at this time, there is no compelling evidence to recommend management of road density to conserve lynx. However, new road construction continues to occur in many watersheds within lynx habitat, many of which are already highly roaded, and the effects on lynx are largely unknown. Further research directed at elucidating the effects of road density on lynx is needed.

Programmatic Planning - Objectives

Maintain the natural competitive advantage of lynx in deep snow conditions.

Programmatic Planning - Standards

On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. Winter logging activity is not subject to this restriction.

Programmatic Planning - Guidelines

1. Determine where high total road densities (>2 miles per square mile) coincide with lynx habitat, and prioritize roads for seasonal restrictions or reclamation in those areas.

2. Minimize roadside brushing in order to provide snowshoe hare habitat.

3. Locate trails and roads away from forested stringers.

4. Limit public use on temporary roads constructed for timber sales. Design new roads, especially the entrance, for effective closure upon completion of sale activities.

5. Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.

LIVESTOCK GRAZING

In riparian areas within lynx habitat, ungulate forage use levels may reduce forage resources available to snowshoe hares. Browsing or grazing can have a direct effect on snowshoe hare habitat if it alters the structure or composition of native plant communities.

Throughout the Rocky Mountains, grazing has been a factor in the decline or loss of aspen as a seral species in subalpine forests. Young, densely regenerating aspen stands with a well-developed understory provide good quality habitat for snowshoe hares and other potential lynx prey species, such as grouse. Grazing should be managed to allow for regeneration of aspen clones.

Particularly in the naturally fragmented habitats of the western United States, inclusions of high elevation shrub-steppe habitats often may exist within the home range of a lynx. Resident lynx are also known to occasionally make exploratory movements out of their home ranges (Squires and Laurion 1999, Aubry et al. 1999), encountering these habitats and potential alternate prey such as ground squirrels and jackrabbits. Therefore, shrub-steppe habitats within the elevational ranges of forested lynx habitat should be considered lynx habitat and be managed to maintain or achieve mid-seral or higher conditions, thereby providing maximum natural cover and prey availability. Those areas that are currently in late seral condition should not be degraded.

Programmatic Planning - Objectives

In lynx habitat and adjacent shrub-steppe habitats, manage grazing to maintain the composition and structure of native plant communities.

Project Planning - Objectives

1. Manage livestock grazing within riparian areas and willow carrs in lynx habitat to provide conditions for lynx and lynx prey.

2. Maintain or move towards native composition and structure of herbaceous and shrub plant communities.

3. Ensure that ungulate grazing does not impede the development of snowshoe hare habitat in natural or created openings within lynx habitat.

Project Planning - Standards

1. Do not allow livestock use in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components. Delay livestock use in post-fire and post-harvest created openings until successful regeneration of the shrub and tree components occurs.

2. Manage grazing in aspen stands to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones.

3. Within the elevational ranges that encompass forested lynx habitat, shrub-steppe habitats should be considered as integral to the lynx habitat matrix and should be managed to maintain or achieve mid seral or higher condition.

4. Within lynx habitat, manage livestock grazing in riparian areas and willow carrs to maintain or achieve mid seral or higher condition to provide cover and forage for prey species.

OTHER HUMAN DEVELOPMENTS: OIL AND GAS LEASING, MINES, RESERVOIRS, AGRICULTURE

Most of these activities affect lynx habitat by changing or eliminating native vegetation, and may also contribute to fragmentation. The primary effects of leases and mines on lynx are probably related to the potential for plowed roads to provide access for lynx competitors, particularly coyotes. Construction of reservoirs will be handled under normal FERC and consultation procedures, and no conservation measures were developed specific to those projects.

Programmatic Planning - Objectives

Design developments to minimize impacts on lynx habitat.

Programmatic Planning - Guidelines

Map oil and gas production and transmission facilities, mining activities and facilities, dams, and agricultural lands on public lands and adjacent private lands, in order to assess cumulative effects.

Project Planning - Standards

On projects where over-snow access is required, restrict use to designated routes.

Project Planning - Guidelines

1. If activities are proposed in lynx habitat, develop stipulations for limitations on the timing of activities and surface use and occupancy at the leasing stage.

2. Minimize snow compaction when authorizing and monitoring developments. Encourage remote monitoring of sites that are located in lynx habitat, so that they do not have to be visited daily.

3. Develop a reclamation plan (e.g., road reclamation and vegetation rehabilitation) for abandoned well sites and closed mines to restore suitable habitat for lynx.

4. Close newly constructed roads (built to access mines or leases) in lynx habitat to public access during project activities. Upon project completion, reclaim or obliterate these roads.

CONSERVATION MEASURES TO ADDRESS MORTALITY RISK FACTORS

TRAPPING (LEGAL AND NON-TARGET)

Lynx are known to be very vulnerable to trapping. Ward and Krebs (1985) stated that trapping was the single most important mortality factor in their Yukon study area. Incidental trapping of lynx can occur in areas where regulated trapping of other species overlaps with lynx habitat (Mech 1973, Carbyn and Patriquin 1983, Squires and Laurion 1999). Lynx may be more vulnerable to trapping near open roads (Koehler and Aubry 1994, Bailey et al. 1986).

The U.S. Fish and Wildlife Service (FWS) is proposing to work with the States to develop a 4-d. rule for all regulated or unregulated trapping (e.g., coyote, wolverine, bobcat, fox) in lynx habitats by establishing adequate trapping protocols to minimize incidental take. Each state would work with FWS to customize the protocol for their specific regions.

Programmatic Planning - Objectives

Reduce incidental harm or capture of lynx during regulated and unregulated trapping activity, and ensure retention of an adequate prey base.

Programmatic Planning - Guidelines

Federal agencies should work cooperatively with States and Tribes to reduce incidental take of lynx related to trapping.

PREDATOR CONTROL

Predator control activities conducted on federal lands by Wildlife Services include trapping, shooting, and poisoning animals on domestic livestock allotments, occasionally within lynx habitat. Similar efforts may be conducted on adjacent private lands. Although such actions are intended to target the offending animal, non-target animals including lynx may be impacted.

Programmatic Planning - Objectives

Reduce incidental harm or capture of lynx during predator control activities, and ensure retention of adequate prey base.

Programmatic Planning - Standards

Predator control activities, including trapping or poisoning on domestic livestock allotments on federal lands within lynx habitat, will be conducted by Wildlife Services personnel in accordance with FWS recommendations established through a formal Section 7 consultation process.

SHOOTING

Lynx may be mistakenly shot by legal predator hunters seeking bobcats, or illegally by poachers. Prey species, such as snowshoe hares and ground squirrels, may also be affected by legal shooting.

Programmatic planning - Objectives

Reduce lynx mortalities related to mistaken identification or illegal shooting.

Programmatic Planning - Guidelines

1. Initiate interagency information and education efforts throughout the range of lynx in the contiguous states. Utilize trailhead posters, magazine articles, news releases, state hunting and trapping regulation booklets, etc., to inform the public of the possible presence of lynx, field identification, and their status.

2. Federal agencies should work cooperatively with States and Tribes to ensure that important lynx prey are conserved.

COMPETITION AND PREDATION AS INFLUENCED BY HUMAN ACTIVITIES

Habitat changes that benefit competitor/ predator species, including some vegetation management practices and providing packed snow travel ways, may lead to increased starvation or direct mortality of lynx. Refer also to applicable conservation measures in the Forest Management, Recreation, and Forest/ Backcountry Roads and Trails sections.

Programmatic Planning - Objectives

Maintain the natural competitive advantage of lynx in deep snow conditions.

Programmatic Planning - Standards

1. On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. This is intended to apply to dispersed recreation, rather than existing ski areas.

HIGHWAYS

Direct mortality from vehicular collisions may be detrimental to lynx populations in the lower 48 states. Mortality levels can drastically increase with relatively small increases in traffic volumes and speed.

Programmatic Planning - Objectives

Reduce the potential for lynx mortality related to highways.

Programmatic Planning - Standards

Within lynx habitat, identify key linkage areas and potential highway crossing areas.

Programmatic Planning - Guidelines

Where needed, develop measures such as wildlife fencing and associated underpasses or overpasses to reduce mortality risk.

CONSERVATION MEASURES TO ADDRESS MOVEMENT AND DISPERSAL

It is essential to provide landscape connectivity so that all or most habitat has the potential of being occupied, and populations remain connected.

At the southern periphery and eastern portions of lynx range, habitat occurs in narrow fragmented bands (man-made or naturally-occurring), or has been fragmented by human developments. Connected forested habitats allow lynx, and other large and medium size carnivores, to easily move long distances in search of food, cover, and mates. Highways and private lands that are subdivided for commercial or residential developments or have high human use patterns can interrupt existing habitat connectivity and further fragment lynx habitat, reducing the potential for population interchange. In some areas, particularly the eastern United States, habitat connectivity may be difficult to achieve because of mixed ownerships. Land exchanges and cooperative management with private landowners may be the only options available to provide landscape connectivity.

Shrub-steppe habitats provide connectivity between mountain ranges and other blocks of primary forested lynx habitat. Where blocks of lynx habitat are separated by intervening basins, valleys, or high mesas of shrub-steppe, land managers should evaluate those shrub-steppe expanses for potential to provide landscape connectivity. Vegetative or geomorphic features within shrub-steppe habitats that may be particularly important are riparian systems and relatively high ridge systems. Where such features exist, land management practices should be consistent with maintaining landscape connectivity. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.

Programmatic Planning - Objectives

Maintain and, where necessary and feasible, restore habitat connectivity across forested landscapes.

Programmatic Planning - Standards

1. Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships.

2. Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project.

3. Evaluate the potential importance of shrub-steppe habitats in providing landscape connectivity between blocks of primary lynx habitat. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.

Programmatic Planning - Guidelines

Where feasible, maintain or enhance native plant communities and patterns, and habitat for potential lynx prey, within identified key linkage areas. Pursue opportunities for cooperative management with other landowners.

HIGHWAYS

Highways impact lynx and other carnivores by fragmenting habitat and impeding movements. As traffic

lanes, volume, speeds, and right-of-way width increase, the effects on lynx and other carnivores are magnified. As human demographics change, highways tend to increase in size and traffic density. Special concern must be given to the development of new highways (gravel roads being paved), and changes in highway design, such as additions in the number of traffic lanes, widening of rights-of-way, or other modifications to increase highway capacity or speed.

Within key linkage areas, highway crossing structures should be employed to reduce effects on wildlife. Information from Canada (Trans-Canada Highway) suggests crossings should generally be at ½-mile intervals and not farther than 1 mile apart, depending on topographic and vegetation features.

Programmatic Planning - Objectives

Ensure that connectivity is maintained across highway rights-of-way.

Programmatic Planning - Standards

1. Federal land management agencies will work cooperatively with the Federal Highway Administration and State Departments of Transportation to address the following within lynx geographic areas:

   a) Identify land corridors necessary to maintain connectivity of lynx habitat.

   b) Map the location of "key linkage areas" where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx (and other wildlife).

Programmatic Planning - Guidelines

Evaluate whether land ownership and management practices are compatible with maintaining lynx highway crossings in key linkage areas. On public lands, management practices will be compatible with providing habitat connectivity. On private lands, agencies will strive to work with landowners to develop conservation easements, exchanges, or other solutions.

Project Planning - Standards

1. Identify, map, and prioritize site-specific locations, using topographic and vegetation features, to determine where highway crossings are needed to reduce highway impacts on lynx.

2. Within the range of lynx, complete a biological assessment for all proposed highway projects on federal lands. A land management agency biologist will review and coordinate with highway departments on development of the biological assessment.

Project Planning - Guidelines

Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared ROW, or would foreseeably contribute to development or increases in human activity in lynx habitat. Such projects may increase habitat fragmentation, create a barrier to movements, increase mortality risks due to vehicle collisions, and generate secondary adverse effects by inducing, facilitating, or exacerbating development and human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.

LAND OWNERSHIP

Lynx exemplify the need for landscape-level ecosystem management. Contiguous tracts of land in public ownership (national forests, national parks, wildlife refuges, and BLM lands) provide an opportunity for management that can maintain lynx habitat connectivity. Throughout most of the lynx range in the lower 48 states, connectivity with habitats and populations in Canada is critical for maintaining populations in the U.S.

Programmatic Planning - Objectives

Retain lands in key linkage areas in public ownership.

Programmatic Planning - Standards

Identify key linkage areas by management jurisdiction(s) in management plans and prescriptions.

Programmatic Planning - Guidelines

In land adjustment programs, identify key linkage areas. Work towards unified management direction via habitat conservation plans, conservation easements or agreements, and land acquisition.

Project Planning - Standards

1. Develop and implement specific management prescriptions to protect/ enhance key linkage areas.

2. Evaluate proposed land exchanges, land sales, and special use permits for effects on key linkage areas.

SKI AREAS/LARGE RESORTS AND ASSOCIATED ACTIVITIES

Ski areas and large resorts are often developed in and across bands of high elevation boreal forests containing lynx habitat. Landscape location, the high intensity of recreational and operational use, and associated development pose a risk to lynx movement and dispersal. Developments that may impede lynx movement occur in Utah and western Wyoming (Northern Rocky Mountains

Geographic Area), Colorado (Southern Rocky Mountains Geographic Area), and possibly portions of the Northeast Geographic Area**.**

Programmatic Planning - Objectives

When conducting landscape level planning on Federal lands, allocate land uses such that landscape connectivity is maintained.

Programmatic Planning - Standards

Within identified key linkage areas, provide for landscape connectivity.

Project Planning - Standards

When planning new or expanding recreational developments, ensure that key linkage areas are protected.

Project Planning - Guidelines

Plan recreational development, and manage recreational and operational uses to provide for lynx movement and to maintain effectiveness of lynx habitat.

This information has been excerpted from the Canada Lynx Conservation Assessment and Strategy. The entire assessment and strategy, along with the amendment proposed for the Northern Rockies can found on the U.S. Fish and Wildlife Service website at:

http://www.fs.fed/r1/planning/lynx/reports/lcas.pdf

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M.02 - BLM

January 22, 2008

MEMORANDUM

To: Field Manager, Bureau of Land Management, Butte, MT

From: Montana Field Supervisor, Helena, MT R. Mark Wilson

Subject: Transmittal of biological opinion for the revised Butte Resource Management Plan

This memo transmits the U.S. Fish and Wildlife Service's (Service) biological opinion for effects to grizzly bears based on our review of the Butte Resource Management Plan (RMP) in western Montana. This also conveys our concurrence with your determinations for the effects of the RMP on gray wolves (*Canis lupus*), Canada lynx (*Lynx Canadensis*), bull trout (*Salvelinus confluentus*), and Ute ladies' tresses (*Spiranthes diluvialis*). The transmitted biological opinion was prepared in response to the Service's June 6, 2007 receipt of your Biological Assessment (BA) requesting concurrence and initiation of formal section 7 consultation under the Endangered Species Act.

The transmitted document represents the Service's biological opinion on the effects of the RMP on grizzly bears in accordance with section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.). The Service has examined the RMP in accordance with the section 7 Interagency Cooperation Regulations (50 CFR 402, 51 FR 19957-19963). The biological opinion refers only to potential effects on grizzly bears and not the overall environmental acceptability of the proposed project. A complete administrative record of this consultation is on file at our Sub-office in Billings, Montana.

Based on our review of the BA and accompanying material, we concur with your determination that the proposed action is likely to adversely affect the threatened grizzly bear. The Service also concurs with your determination that the action is not likely to adversely affect the gray wolf, Canada lynx, bull trout, and Ute ladies' tresses. This concurrence is based on your BA as well as the RMP environmental impact statement. In addition, you made a "no effect" determination for the black-footed ferret and a no jeopardy call for the experimental/nonessential population of the gray wolf. When BLM makes a no effect determination (or no jeopardy for experimental/non-essential populations), concurrence from the Service is not required, although we do appreciate inclusion of the information for our records. In the BA you also made effects determinations for the bald eagle (*Haliaeetus leucocephalus*) and arctic grayling (*Thymalus arcticus*). Bald eagles

and arctic grayling were subsequently removed from Threatened and Candidate status in 2007 and consultation is no longer required for those species.

If you have further questions about this letter or your responsibilities under the Endangered Species Act, please contact me or Anne Vandehey of my staff at 406-449-5225.

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

BIOLOGICAL OPINION
ON THE
EFFECTS OF THE BUTTE BUREAU OF LAND MANAGEMENT RESOURCE MANAGEMENT PLAN ON GRIZZLY BEARS

Agency:	U.S. Department of Interior Bureau of Land Management Butte Field Office Butte, Montana
Consultation Conducted by:	U.S. Fish and Wildlife Service Montana Field Office Helena, Montana
Date Issued:	

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I. INTRODUCTION

In this biological opinion, the U.S. Fish and Wildlife Service (Service) analyzed effects of the implementation of the Butte Resource Management Plan (RMP) on grizzly bears (*Ursus arctos horribilis*) that occur on lands and mineral estate administered by the Butte Bureau of Land Management (BLM) Field Office in western Montana. Formal consultation was initiated on June 6, 2007, when the Service received the biological assessment (BLM, 2007) for this project.

Section 7(b)(3)(A) of the Endangered Species Act of 1973, as amended (Act) requires that the Secretary of Interior issue biological opinions on federal agency actions that may affect listed species or critical habitat. Biological opinions determine if the action proposed by the action agency is likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Section 7(b)(3)(A) of the Act also requires the Secretary to suggest reasonable and prudent alternatives to any action that is found likely to result in jeopardy or adverse modification of critical habitat, if any has been designated. This biological opinion addresses only impacts to federally listed species and does not address the overall environmental acceptability of the proposed action.

Consultation History

In 2005 the Service began discussions with the Butte RMP Interdisciplinary Team about changes in grizzly bear habitat and range since the adoption of previous land use planning documents. In meetings and phone conversations it was relayed to BLM personnel that grizzly bears have expanded their range over the past decades and occur outside the Northern Continental Divide Ecosystem Recovery Zone (NCDE or recovery zone). Grizzly bear occurrence and reports of occurrence outside the recovery zone boundary have been increasing over time, throughout the ecosystem. A team of biologists and grizzly bear experts from the Interagency Grizzly Bear Study Team, Forest Service, Montana Fish, Wildlife and Parks, and Service produced a grizzly bear distribution map displaying where grizzly bears could reasonably be expected to occur (U.S. Forest Service, 2002a). The current distribution of grizzly bears overlaps lands administered by the BLM under the proposed Butte RMP. All of these lands are outside of grizzly bear recovery zones established by the Service and so are deemed not necessary for recovery of the species. Interagency teams including representatives from the Service, Forest Service, and the BLM discussed issues related to the increasing frequency of grizzly bear occurrence outside of designated recovery zones over the past few years (U.S. Forest Service unpublished meeting agendas and notes, 2001-2004).

As a result of these discussions, the BLM concluded that the management actions proposed in the RMP were, in rare circumstances, likely to adversely affect grizzly bears as they occur outside the Northern Continental Divide Ecosystem (NCDE) Recovery Zone. Therefore, the BLM requested programmatic consultation on the effects of implementation of the Butte RMP on grizzly bears.

II. DESCRIPTION OF THE PROPOSED ACTION

The action is the implementation of the Butte RMP and includes lands with BLM surface and/or mineral ownership in seven counties in southwest Montana. Of these, only BLM lands and minerals in Lewis and Clark County include areas where grizzly bears may occur outside the NCDE Recovery Zone. The action area includes areas of the Field Office within the distribution of grizzly bears (U.S. Forest Service, 2002a). The BLM's biological assessment identified two program areas that are likely to adversely affect grizzly bears: access management and livestock grazing. This biological opinion focuses on the effects of RMP direction related to access management, food storage, and livestock grazing on grizzly bears occurring on the RMP area outside of the NCDE recovery zone.

At the time the Headwaters RMP was written, grizzly bears were unknown on BLM lands in the action area. The Headwaters RMP (BLM, 1984) provides goals, objectives, and standards as part of the proposed action for the management of wildlife, however, there is little reference to grizzly bears in the plan and no goals, standards, and guidelines to minimize adverse effects to grizzly bears.

III. STATUS OF THE SPECIES /CRITICAL HABITAT DESCRIPTION

Species/Critical Habitat Description

Grizzly bears are among the largest terrestrial mammals in North America. South of the United States - Canada border, adult females range from 250-350 pounds and adult males range from 400 to 600 pounds. Grizzly bears are relatively long-lived, living 25 years or longer in the wild. Grizzly bears are omnivorous, opportunistic feeders that require foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive seasonal pre-and post-denning

requirements. Grizzly bears are homeo-hypothermic hibernators, meaning their body temperature drops no more than five degrees C during winter when deep snow, low food availability, and low ambient air temperatures appear to make winter sleep essential to grizzly bears' survival (Craighead and Craighead, 1972a, 1972b). Grizzly bears excavate dens and require environments well covered with a blanket of snow for up to five months, generally beginning in fall (September-November) and extending until spring (March-April) (Craighead and Craighead, 1972b; Pearson, 1972).

Listing History

The grizzly bear was listed as a threatened species under the Act in the lower 48 states on July 28, 1975 (40 FR 31736). The Service identified the following as factors establishing the need to list: (1) present or threatened destruction, modification, or curtailment of habitat or range; (2) overutilization for commercial, sporting, scientific, or educational purposes; and (3) other manmade factors affecting its continued existence. The two primary challenges in grizzly bear conservation are the reduction of human-caused mortality and the conservation of remaining habitat (U.S. Fish and Wildlife Service, 1993).

The grizzly bear recovery plan (Recovery Plan) was completed on January 1982 and was revised in 1993 (U.S. Fish and Wildlife Service, 1993). The 1993 revised Recovery Plan delineated grizzly bear recovery zones in 6 mountainous ecosystems in the U.S. The Recovery Plan details recovery objectives and strategies for the grizzly bear recovery zones in the ecosystems where grizzly bear populations still persist. These recovery zones are the Northern Continental Divide (NCDE), Yellowstone Grizzly Bear (YGBE), Cabinet-Yaak (CYE), and Selkirk (SE) Ecosystems. Grizzly bears in the YGBE have recovered and were de-listed by the Service in 2007. The Recovery Plan also includes recovery strategies for the North Cascades ecosystem in Washington, where only a very few grizzly bears are believed to remain, and for the Selway-Bitterroot ecosystem of Idaho and Montana, where suitable grizzly bear habitat still occurs.

Life History

Grizzly bears are large animals with great metabolic demands requiring extensive home ranges. The search for energy-rich food appears to be a driving force in grizzly bear behavior, habitat selection, and intra/inter-specific interactions. Grizzly bears historically used a wide variety of habitats across North America, from open to forested, temperate through alpine and arctic habitats, once occurring as far south as Mexico. They are highly dependent upon learned food locations within their home ranges. Adequate nutritional quality and quantity are important factors for successful reproduction. Diverse structural stages that support wide varieties of nourishing plants and animals are necessary for meeting the high-energy demands of these large animals. Grizzly bears follow phenological vegetative, tuber or fruit development, seek out concentrated food sources including carrion, live prey (fish, mammals, insects), and are easily attracted to human food sources including gardens, grain, compost, bird seed, livestock, hunter gut piles, bait and garbage. Bears that lose their natural fear and avoidance of humans, usually as a result of food rewards, become habituated and may become food-conditioned. Grizzly bears will defend food and have been known to charge when surprised. As a result of real or perceived threats to human safety or property, both habituation and food conditioning increase chances of human-caused grizzly bear mortality. Nuisance grizzly bear mortalities can be a result of legal management actions, defense of human life or illegal killing.

Adult grizzly bears are normally solitary, except females with cubs or during short breeding relationships. They will tolerate other grizzly bears at closer distances when food sources are concentrated and siblings may associate for several years following weaning (Jonkel and Cowan, 1971; Craighead, 1976; Egbert and Stokes, 1976; Glenn et al., 1976; Herrero, 1978). Across their range, home range sizes vary from about 50 square miles or more for females to a few hundred square miles for males. Overlap of home ranges is common. Grizzly bears may have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age at first reproduction, small average litter size and the long interval between litters. Mating occurs from late May through mid-July. Females in estrus will accept more than one adult male (Hornocker, 1962), and can produce cubs from different fathers the same year (Craighead et al., 1995). Age of first reproduction and litter size may be nutritionally related (Herrero, 1978; Russell et al., 1978). Average age at first reproduction in the lower 48 states for females is 5.5 years and litter size ranges from one to four cubs that stay with the mother up to two years. Males may reach physiological reproductive age at 4.5 years, but may not be behaviorally reproductive due to other dominant males preventing mating.

Habitat fragmentation is significant for large carnivores requiring wide vegetative and topographic habitat diversity (Servheen, 1986). Loss and fragmentation of habitat is particularly relevant to the survival of grizzly bears. Large expanses of unfragmented habitat are important for feeding, breeding, sheltering, traveling, and other essential behavioral patterns. Grizzly bears occur at low densities, have low reproductive rates, exhibit individualistic behavior, and are largely dependent on riparian habitats also used extensively by people; thus, grizzly bear populations are susceptible to human influences. Grizzly bears may avoid key habitats due to human generated disturbances, or become habituated and food conditioned, which may ultimately lead to the animal being destroyed. Historically, as human settlements, developments,

and roads increased in grizzly bear habitat, grizzly bear populations became fragmented. As fragmented population segments become smaller and/or isolated, they are more vulnerable to extinction, especially when human-caused mortality pressures continue. Linkage zones are rather recent concepts in broad management direction for grizzly bears and other wide-ranging species (Servheen and Sandstrom, 1993). Linkage zones, or zones of habitat connectivity within or between populations of animals, foster the genetic and demographic health of the species. Bader (2000) displays potential secure areas that are spatially distributed within known male and female grizzly bear dispersal distances and he believes that the available information shows that effective linkages are possible for grizzly bear use and these linkage areas would increase persistence probabilities.

Natural mortality is known to occur from intra-specific predation, but the degree this occurs in natural populations is not known. Parasites and disease do not appear to be a significant cause of natural mortality (Jonkel and Cowan, 1971; Kistchinskii, 1972; Mundy and Flook, 1973; Rogers and Rogers, 1976). As animals highly dependent upon learned knowledge of their habitat, displacement into unknown territory (such as subadult dispersal) may lead to suboptimal nutrition, reduced reproduction, or greater exposure to adult predatory bears or human food sources (which can lead to human-caused mortality). Starvation and loss in dens during food shortages have been surmised, but have not been documented as a major mortality factor. Natural mortality in rare, relatively secretive animals such as grizzlies can be extremely difficult to document or quantify.

Human-caused mortality has been slightly better quantified, but recent models speculate that reported mortality may only 50 percent of actual mortality (McLellan et al., 1999). Between 1800 and 1975, grizzly populations in the lower 48 states declined drastically. Fur trapping, mining, ranching, and farming pushed westward, altered habitat and resulted in the direct killing of grizzly bears. Historically, grizzly bears were targeted in predator control programs in the 1930's. Predator control was probably responsible for extirpation in many states that no longer support grizzlies. More recent human-caused mortality in Montana includes legal hunting (canceled in 1991), management control actions, defense of life, vehicle and train collisions, defense of property, mistaken identity by black bear or other big game hunters, poaching and malicious killing. Grizzly bears normally avoid people, possibly as a result of many generations of bear sport hunting and human-caused mortality. Displacement away from human activities has been documented to reduce fitness of grizzly bears, affecting survival in some instances. Avoidance of roads can lead grizzly bears to either avoid essential habitat along roads, or could put them at greater risk of exposure to human-caused mortality if they do not avoid roads.

Status and Distribution

The grizzly bear originally inhabited a variety of habitats from the Great Plains to the mountains of western North America, from central Mexico to the Arctic Ocean. With the advent of Euroamerican colonization in the early nineteenth century, grizzly bear numbers were reduced from over 50,000 to less than 1,000 in North America south of the Canadian border. Today, the grizzly bear occupies less than two percent of its former range south of Canada (U.S. Fish and Wildlife Service, 1993). In the conterminous 48 States, only five remaining areas have either remnant or self-perpetuating populations. These remaining populations are principally located in mountainous regions in Washington, Idaho, Wyoming, and Montana and are often associated with National Parks and wilderness areas.

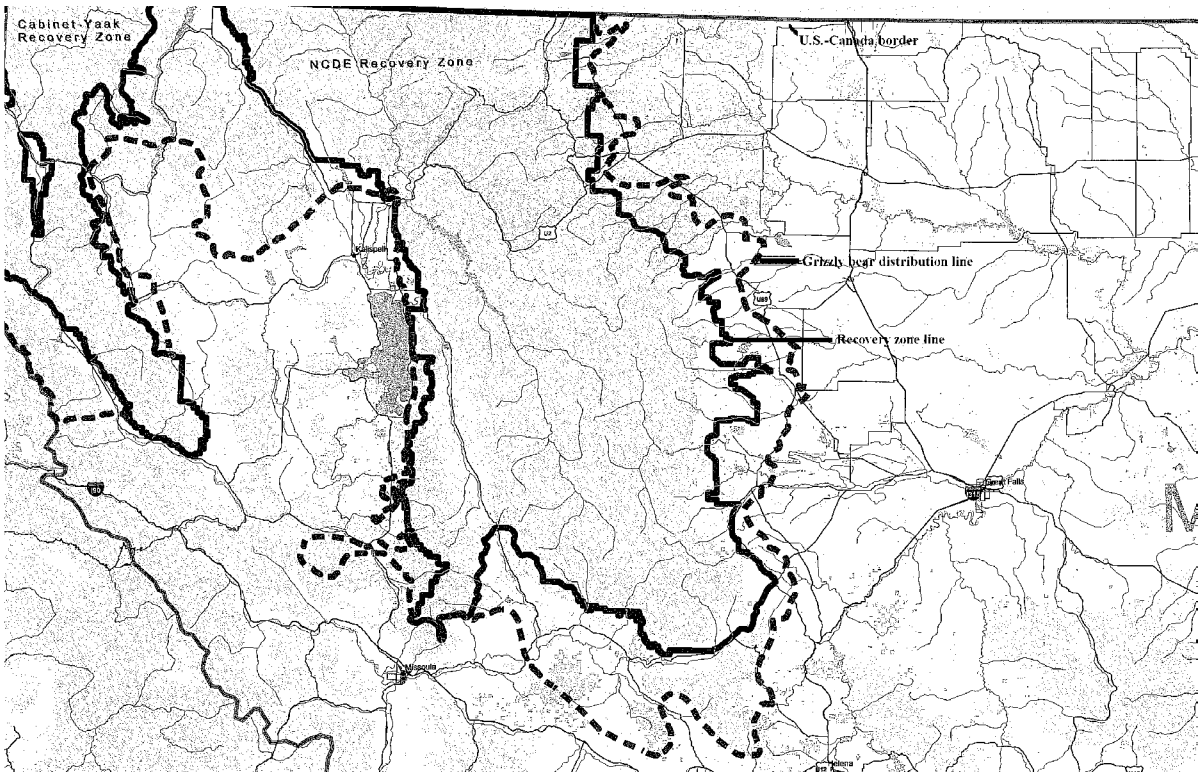
Status of grizzly bears in the NCDE

The NCDE extends from the Rocky Mountains of northern Montana into contiguous areas in Alberta and British Columbia, Canada. The U.S. portion of the NCDE which makes up the NCDE recovery zone (U.S. Fish and Wildlife Service 1993) encompasses over 9,600 square miles and includes parts of five National Forests (Flathead, Kootenai, Helena, Lewis and Clark, and Lolo), four wilderness areas (Bob Marshall, Mission Mountains, Great Bear, and Scapegoat), and one wilderness study area (Deep Creek North) (Figure 1). National Forest System lands encompass 63 percent of the NCDE recovery zone. Additionally, the NCDE recovery zone includes Glacier National Park (GNP), the Flathead Indian Reservation (Salish-Kootenai tribal land), the Blackfeet Indian Reservation, adjacent private and State lands, and lands managed by the Bureau of Land Management.

The NCDE grizzly bear recovery zone is subdivided into smaller units to facilitate both the assessment of projects and recovery objectives. Twenty-three bear management units (BMU) were formally delineated throughout the NCDE. BMU were designed to:

- Assess the effects of existing and proposed activities on grizzly bear habitat without having the effects diluted by consideration of too large an area;
- Address unique habitat characteristics and grizzly bear activity and use patterns;
- Identify contiguous complexes of habitat which meet year-long needs of the grizzly bear; and
- Establish priorities for areas where land use management needs would require cumulative effects assessments.

Figure 1. NCDE (solid line) and grizzly bear distribution area (dashed line) (U.S. Forest Service 2002a).



The exact size of the grizzly bear population in the NCDE is not known. The nature of the species and the rugged terrain it inhabits makes complete population census difficult, if not impossible. Population parameters more readily monitored are used as an alternative index to population size. The Recovery Plan identified unduplicated females with cubs as one surrogate index for estimating a minimum number of grizzly bears within a recovery zone. The Recovery Plan does not rely entirely on this minimum population estimate to assess the status of grizzly bear populations. The Recovery Plan incorporates a number of measurable parameters to assess population status, including the number of females with cubs, the distribution of family groups, and the relationship between the minimum population estimate and known, human-caused grizzly bear mortality.

The Recovery Plan defines a recovered grizzly bear population as one that can sustain the existing level of known and unknown human-caused mortality that exists in the ecosystem and that is well distributed throughout the recovery zone. Demographic recovery criteria outlined for the NCDE recovery zone include:

- Observation of 22 females with cubs of the year (unduplicated sightings), 10 in Glacier National Park and 12 outside the park, over a 6-year average both inside the recovery area and within a 10 mile area immediately surrounding the recovery zone, excluding Canada;
- Twenty-one of the 23 BMUs occupied by females with young from a running 6-year sum of verified observations, and with no two adjacent BMUs unoccupied;
- Known, human-caused mortality not to exceed 4 percent of the current population estimate (based on most recent 3-year average of females with young);
- No more than 30 percent of the known, human-caused mortality shall be females;
- The mortality limits cannot be exceeded in more than 2 consecutive years for recovery to be achieved; and
- Recovery in the NCDE cannot be achieved without occupancy of the Mission Mountains portion of the NCDE.

Mortality of grizzly bears within a 10-mile area outside the recovery zone boundary is counted towards recovery zone statistics. This is a conservative accounting for grizzly bears making their range primarily in the recovery zone, but it includes bears whose range overlaps the recovery zone line.

In the NCDE, results from monitoring grizzly bears during 1987 through 1996 indicate the Recovery Plan criteria for several population recovery parameters were met, including numbers of females with cubs; numbers of BMUs with family groups; occupancy requirements for BMUs; and total human-caused grizzly bear mortality. Calendar year 2001

was the first year that annual total mortality (6-year average) and annual female mortality (6-year average) were both exceeded (U.S. Fish and Wildlife Service, 2006a). In 2002 and 2003, 15 and 16 grizzly bear mortalities occurred, respectively. During these years three population parameters did not meet demographic recovery criteria: females with cubs inside Glacier National Park (6-year average), annual mortality (6-year average), and annual female mortality (6-year average) (Ibid.). Data for 2004 indicate an increase in overall grizzly bear mortality within the NCDE recovery zone over the past 4 years (U.S. Fish and Wildlife Service 2006a). In 2004, there were 34 grizzly bear mortalities, including 21 females. Four population parameters did not meet demographic recovery criteria (table 1).

Table 1. 2004 Status of the NCDE in Relation to the Demographic Recovery Criteria (U.S. Fish and Wildlife Service 2006a).

Population Parameter	Target Number	2004 Number
Females w/cubs (6 yr average)	22	21.8 (131/6)
Inside GNP (6 yr average)	10	9.1 (55/6)
Outside GNP (6 yr average)	12	15 (76/6)
Mortality limit as 4% of min. est.	Less than 12	20.0 (6 yr. avg.) *
Female mortality limit as 30% of total	Less than 3.6	9.0 (6 yr avg.) *
Distribution of females w/young	21 of 23 with Missions occupied	23 of 23; Missions are occupied

* Exceeds mortality limits

The Recovery Plan requires limits on human-caused grizzly bear mortality as one of the criteria for recovery and delisting. The limits on total and female mortality account for unknown, unreported mortality. Although the Service is concerned with the recent number of grizzly bear mortalities in the NCDE recovery zone, the mortality limits in the Recovery Plan are clearly conservative. Currently, the mathematics used to calculate sustainable mortality limits depend on field counts of females and cubs. An established protocol for this count does not exist, and counting effort varies considerably among years. The NCDE is heavily forested and visual sightings of females with cubs are not easily obtained. Mace and Waller studied grizzly bears in a small portion of the NCDE from 1987 to 1997. Even this intense observation effort yielded variable counts from year to year. The observation variability is also reflected in years not included in the study (U.S. Fish and Wildlife Service, 2006a).

The purpose of counting females with cubs is to estimate a known minimum number of adult females to demonstrate sufficient reproduction to offset existing levels of mortality (U.S. Fish and Wildlife Service 1993). Years during which the effort to count female grizzly bears is poor or conditions are unfavorable may yield very conservative counts of females with cubs. These conservative counts result in a conservative minimum population estimate, which results in conservative human-caused mortality limits. Due to the varying effort and success in counting females with cubs, neither these annual number of females with cubs counted or the human-caused mortality limits/annual tally can be used to estimate trend (U.S. Fish and Wildlife Service, 1993).

The conservative nature of the human-caused mortality estimates were intentional, as the Recovery Plan attempted to incorporate limits that clearly measured recovery of the population. The methodology used in the Recovery Plan (Knight et al., 1988, 1993 *in* U.S. Fish and Wildlife, 1993) and observations of unduplicated females with cubs from 2002 through 2004 (U.S. Fish and Wildlife Service, 2006a) results in an estimated minimum number of grizzly bears in the NCDE in 2004 of 304 bears.

Current levels of human-caused mortality may be above that sustainable by the population, if the number of grizzly bears in the NCDE is near the minimum estimate. However, current levels may be sustainable by the population if the number of grizzly bears is in fact higher than the minimum. The Service acknowledges that females with cubs are typically poorly counted in the NCDE recovery zone. Reliable estimates of total population versus a minimum population estimate would allow significant insights into assessing the current status of NCDE grizzly bear population.

It is expected that reliable NCDE grizzly bear population estimates will be available within the next year (Kendall, 2004a, b). The U.S. Geological Survey (USGS) DNA-based mark-recapture study in the greater Glacier area collected information from 1998 through 2000 and the data are being analyzed. Final population estimates for this northern one-third of the ecosystem are expected in the fall of 2005 (K. Kendall, USGS, pers. comm., 2005). A preliminary estimate

of grizzly bear numbers from the greater Glacier study was previously reported, but the data are undergoing further analysis and a conclusion is not available at this time (K. Kendall, U.S. Geological Survey, pers. comm., 2005). A more extensive DNA-based study is underway in the entire NCDE recovery zone and grizzly bear population estimates from this study could be available as early as the end of 2007. With 81 percent of the samples analyzed thus far, at least 545 known individual grizzly bears have been identified from samples obtained in the NCDE during 2004 (K. Kendall, USGS, pers. comm., 2007). With 20 percent of the sample yet to be analyzed, the number of known individuals will likely increase. At this time however, even the minimum of 545 grizzly bears for 2004 illustrates the conservative nature of the recovery plan minimum population estimate of 304 grizzly bears in 2004.

We lack precise grizzly bear trend information in the NCDE. During 1987 to 1996, research in the Swan Mountains indicated a tenuous finite rate of increase of 0.977 for grizzly bears in the study area related to high female mortality (Mace and Waller, 1998). However, the authors concluded the study area population was stable, or experiencing an "exceedingly" slow population decline. The authors concluded the population was probably stable based on multiple lines of evidence, including vital rates, density, and occupancy of grizzly bears in the multiple-use zone (Forest Service lands). It is important to note that annual mortality rates for bears utilizing roaded rural (private lands and adjacent roaded areas) and wilderness areas was 21 and 15 times higher, respectively, than for bears using only multiple-use lands (Ibid.). Mortalities in the wilderness areas resulted from "mistaken identity" during the black bear hunting season and human defense of life. In rural areas, mortalities resulted from malicious killing and the management removal of habituated or food-conditioned bears (Ibid.). Recent data (U.S. Fish and Wildlife Service 2006b) indicate that the majority of human-caused mortalities in the NCDE continue to be management removal of nuisance or habituated grizzly bears and illegal killings. The majority of these mortalities occur on roaded, rural areas and not on roaded multiple-use Forest Service lands away from private sites. The Service classified roaded rural as private and public land within 1 mile of a developed private site. This differs slightly from Mace and Waller's classification of roaded rural as private only. Both classifications demonstrate the higher incidence of grizzly bear mortality associated with areas in proximity to private lands and associated development.

For many reasons, extrapolation of the rate of increase of grizzly bears in the Swan Mountains study area to the entire NCDE recovery zone population is not reasonable. Grizzly bears living in the South Fork area (including the Swan Mountains) are semi-isolated from other portions of the ecosystem, particularly females (Mace and Waller, 1998). The study area was geographically situated between Hungry Horse Reservoir to the east and private lands to the west and south with extensive human development and activity in some areas. Grizzly bears face increased mortality risks due to their proximity to these highly developed lands. According to the authors, these areas of private lands acted as mortality "sinks" for study area bears, and accounted for a great deal of the mortality incurred by study animals. The study area from which the grizzly bear sample was obtained was small (about 360,000 acres) in comparison to the NCDE (over 5,700,000 acres). The NCDE encompasses many diverse habitats such as Glacier National Park with nearly 1,000,000 acres of highest quality habitat, few if any permanent human residences, no public use of firearms, and strict food storage enforcement. Over 1.7 million acres of wilderness (essentially roadless lands) are included in the NCDE along with the Rocky Mountain Front (comprised of drier habitat types east of the Continental Divide, bounded by ranches and relatively low human population), the Swan Valley (high quality habitat but highly populated with people, high road densities, and a public/private checkerboard land ownership pattern), and the North Fork (comprised of very high quality habitat and fewer human residents, bounded by Glacier National Park to the west). It is not known whether similar patterns of grizzly bear population growth, density, or natural and human-caused mortality rates occur across this ecosystem, based on the South Fork Study.

Grizzly bears in the Flathead drainage of British Columbia, including a portion of the Upper North Fork of the Flathead River area in Montana, were shown to be increasing in number over a 10-year period immediately preceding the South Fork study (McLellan 1989b). The density of grizzly bears was high and increased from 5.7 per 100 square kilometers to 8.0 per 100 square kilometer between 1981 and 1986. The estimated average grizzly bear density was 6.4 per 100 square kilometers, high for an interior population.

Montana Fish, Wildlife and Parks (MFWP) initiated a NCDE grizzly bear trend monitoring project in 2005 (R. Mace, MFWP, unpublished 2006). Thus far, a total of 32 females were captured and 22 of these remain radio-collared in 2006. Trend estimates are expected in 2009.

Additionally, a recent mapping effort (U.S. Forest Service 2002a) used 5 years of location data to map the area outside the recovery zone where grizzly bears may occur. The resulting distribution of known grizzly bear presence extends to the west, south, and east of the recovery zone. Although information is limited and not statistically analyzed, grizzly bear occurrences are being increasingly documented outside the recovery zone line suggesting that the grizzly bear population in the NCDE is expanding. Due to the broad distribution of grizzly bear locations and known grizzly bear distribution within the recovery zone, this expansion is likely due to increased grizzly bear numbers in some areas of the recovery zone.

For comparison, the best available information suggests the YGBE grizzly bear population is stable to increasing (Eberhardt et al., 1994; Boyce, 1995; Boyce et al., 2001). Corresponding with this increasing population, female grizzly bears with cubs are well distributed in the Yellowstone recovery zone and sightings of other individuals with cubs occur outside the recovery and 10-mile buffer zone (Haroldson, 2002, 2003; Podruzny et al., 2002). The authors speculated that the 34 percent expansion of grizzly bear range during 1980 to 1990 was likely a product of improved management practices, a series of good food years, and a population increase. Only an estimate of minimum population number is calculated for the NCDE, and population trend information is not available at this time. However, similarities of access management to the Greater Yellowstone Ecosystem (GYE), the distribution of grizzly bears across the recovery zone, and increasing occurrence of bears outside the recovery zone could reasonably be interpreted as indicative of an increasing grizzly bear population in portions of the NCDE as well.

The DNA-based population estimates for the northern one-third of the NCDE will provide important insights into further assessment of the minimum population estimate derived through Recovery Plan methods, and provide a meaningful context within which to view mortality limits and current levels of human-caused grizzly bear mortality. Likewise, the NCDE-wide grizzly bear population estimate, likely available in late 2006, will be invaluable to assessing the status of the population, gauging the use of minimum population estimates, and assessing the impacts of current levels of human-caused mortality. Trend information from the MFWP efforts will be valuable in assessing the population status. In the meantime, the Service finds no compelling evidence to support a prediction that the NCDE grizzly bear population is in decline. Evidence to the contrary, including current distribution of grizzly bears within and outside the recovery zone, reported numbers and locations of recent sightings and conflicts, information and views of MFWP (MFWP in litt. 2005), and observations by NCDE grizzly bear experts (Waller, 2005), suggest a stable or perhaps increasing number of grizzly bears in several areas of the recovery zone. If the DNA-based population estimates reveal we have substantively erred in our assumptions, we will reassess whether the population status would change our conclusions regarding the effects of this proposed action, in accordance with CFR 402.16.

Factors Affecting Grizzly Bears in the NCDE

A major issue in grizzly bear recovery in the NCDE recovery zone is sanitation related human-caused grizzly bear mortality. Towns and settlements are common in low elevations and major valley bottoms within and adjacent to the recovery zone. Human generated food sources such as bird feeders, garbage, pet and livestock foods, human foods, gardens, and orchards present powerful attractants for grizzly bears. Grizzly bears attracted to these human-generated food sources become habituated and food conditioned. Such bears often become a threat to human safety and property and are killed illegally or removed through agency nuisance grizzly bear control actions.

Sanitation related grizzly bear deaths are among the leading causes of grizzly bear mortality in the NCDE (U.S. Fish and Wildlife in litt. 2004). Data collected since 1980 demonstrate human site conflicts, which involve habituation of bears to human foods and garbage, resulted in 15.5 percent of total grizzly bear mortality within the NCDE recovery zone (Ibid.). This figure increases to 22 percent with the addition of grizzly bear mortality resulting from livestock depredation. Illegal and malicious killing of grizzly bears is the second leading cause of death at 13.5 percent. Legal hunting of grizzly bears is the only activity that exceeded human site conflicts as a source of grizzly bear mortality. Legal hunting of grizzly bears ended in 1991.

An increasing trend is observed in human-caused grizzly bear mortality in the NCDE. The 31 known human-caused grizzly bear mortalities in 2004 was a 29-year high. From 1999 to 2004, the number of grizzly bears removed for conflicts related to human food and livestock depredation increased from 6 to 13 (U.S. Fish and Wildlife Service, 2004), 35 percent and 42 percent of the total mortalities for the respective year. In 2004, 10 of the mortalities were associated with buildings and garbage and 3 of the mortalities involved buildings and grain (U.S. Fish and Wildlife Service 2004). Consistently, mortalities from human-related causes occurred on private lands in the NCDE greater than any other land ownership (Mace and Waller 1998, U.S. Fish and Wildlife Service 2004). Grizzly bears using the interface of rural roaded and multiple-use lands in the Swan Mountains suffered a significantly higher rate of human-caused mortality than individuals using only the multiple-use lands on the Forest (Mace and Waller, 1998).

In the NCDE during 1998 and 2004, significant huckleberry crop failures precipitated an increase in conflicts with grizzly bears (Manley, 2005). During a normal year, a fraction of the grizzly bear population would use natural food sources at low elevations during huckleberry season. In 2004, with the lack of huckleberries at higher elevations, many more grizzly bears used low elevation habitats in search for late summer and fall foods (Manley 2005; R. Mace, Montana Fish, Wildlife and Parks, pers. comm. 2005). The search for food at low elevations puts bears into close proximity to private lands and associated attractants. The number of conflicts and grizzly bear management removals from private and public lands rose dramatically above average. During 2003 and 2004, Montana Fish, Wildlife and Parks Region 1 received over 50 and 225 calls reporting conflicts with grizzly bears, respectively (Manley, 2005). Ninety-five percent were confirmed grizzly bear conflicts and of these, about 95 percent were from private landowners living in or adjacent to grizzly bear

habitat. Conflicts involved grizzly bears seeking unnatural foods in yards or actually causing property damage by trying to access foods in vehicles and buildings. Thirty-one grizzly bears were captured in 2004; 40 percent in the summer and 40 percent in the fall, compared to 20 percent captured in the spring. Eighty-eight percent of the captures were on private property, the rest on public lands. In comparison, only 13 grizzlies were captured in 2003, all on private property.

The Recovery Plan identifies access management as an important tool for conserving grizzly bears and their habitat. To facilitate tracking and controlling cumulative effects of access across the NCDE, the recovery zone was divided into Bear Management Units (BMUs). Each BMU in the NCDE were further divided into smaller units, termed subunits. Subunits are approximately the size of an adult female grizzly bear home range (roughly 50 square miles) and provide the basic scale for the analysis of impacts associated with access management and vegetation management projects. See Appendix C for access conditions of each subunit in the NCDE.

The Butte RMP area does not contain lands within the NCDE recovery zone, consequently, the Butte Field Office does not manage any Bear Management Units or Subunits inside the recovery zone. Access management in grizzly bear habitat in the Butte RMP area outside the NCDE recovery zone is generally managed under guidance from the Montana Cooperative Elk-logging Study (U.S. Forest Service, 1982).

The Lolo National Forest adopted a grizzly bear strategy and amended incidental take statement for its Forest Plan in 1996 that included the NCDE Access Committee recommendations and the Flathead Amendment 19 road density goals (U.S. Forest Service 1996; U.S. Fish and Wildlife Service, 1996) for subunits within the NCDE recovery zone. All but one of seven subunits in two BMUs on the Lolo National Forest has met access objectives; work to reduce road densities is on-going in the Swan subunit (U.S. Forest Service 2004).

The Flathead National Forest encompasses all or portions of 11 BMU and has 70 subunits. Of these 70 subunits, 16 occur entirely within designated wilderness, and are not subject to land management actions such as timber harvest and road construction. Amendment 19 established standards and objectives for the remaining 54 subunits. Of these 54 subunits, 40 are predominantly national forest, in that they are comprised of at least 75 percent national forest lands. As of 2005, eighteen of these subunits met all access standards (U.S. Forest Service, 2005b).

Although the Helena National Forest and Lewis and Clark National Forest have not amended their respective forest plans with the NCDE Access Committee recommendations and 1994 Interagency Grizzly Bear Guidelines (IGBC) guidelines (Interagency Grizzly Bear Committee, 1994), the Flathead A19 is considered accepted road management protocol (U.S. Forest Service 2005a; Wendy Maples, U.S. Forest Service, pers. comm., 2005). The Helena and Lewis and Clark Forests have used the 1994 IGBC guidelines to monitor and implement a no net increase in road densities and no loss of core during project planning.

The Helena National Forest manages one BMU with three subunits of the NCDE (Table 4). Of these three subunits, two meet access guidelines. The Lewis and Clark National Forest has 13 subunits in 6 BMUs, 8 subunits consist of less than 75 percent forest service management and are roaded. However, a preponderance of these roads occurs on private rural or ranch lands and do not receive public use. Two subunits with over 75 percent forest service management are in wilderness. Of the three remaining subunits, two meet access objectives (U.S. Forest Service, 2005 in litt.). Glacier National Park road densities are low. Assuming adequate goals for road and trail access management will be attained through recent and upcoming decisions and actions; the Service considers NCDE recovery zone access management as contributing to and promoting grizzly bear recovery.

The NCDE contains large amounts of secure habitat and low total and open road densities in the majority of the subunits. For the subunits in the NCDE recovery zone that have greater than 75 percent Forest Service ownership, the mean secure habitat is 66.5 percent, the mean Total Motorized Access Density (TMAD) is 15.0 percent and the mean Open Motorized Access Density (OMAD) is 18.1 percent (U.S. Forest Service 2004; 2005a; 2005b; U.S. Forest Service in litt., 2005). See appendix C for all subunit values for OMAD, TMAD and secure habitat across the NCDE.

Habitat fragmentation is significant to large carnivores requiring wide vegetative and topographic habitat diversity (Servheen, 1986). Loss and fragmentation of habitat is particularly relevant to the survival of grizzly bears. Grizzly bears are large animals with great metabolic demands requiring extensive home ranges. Movements of grizzly bears may exceed 60 airline miles and their home ranges can encompass from 50 to over 100 square miles in the NCDE. Large expanses of unfragmented habitat are important for feeding, breeding, sheltering, traveling, and other essential behavioral patterns. Grizzly bears occur at low densities, have low reproductive rates, exhibit individualistic behavior, and are largely dependent on riparian habitats also used extensively by people; thus grizzly bear populations are susceptible to human influences. Grizzly bears may avoid key habitats due to human generated disturbances, or become habituated and food conditioned, which ultimately leads to the animal being destroyed. Historically, as human settlements and developments along roads increased in grizzly bear habitat, grizzly bear populations became fragmented. As fragmented population segments become smaller and/or isolated, they are more vulnerable to extinction, especially when human-caused mortality pressures continue. Linkage zones are rather recent concepts in broad management direction for grizzly bears and oth-

er large-ranging species (Servheen and Sandstrom, 1993). Linkage zones, or zones of habitat connectivity within or between populations of animals, foster the genetic and demographic health of the species.

Status of grizzly bears in the YGBE

All recovery parameters for the recovery zone were met in 2003 (Schwartz and Haroldson, 2004). Recovery parameters had been met for at least the last 5 years through 2003. The mortality threshold of 5.2 for female bears was slightly exceeded in 2004 with a 6-year running average of 6 human-caused female mortalities (Haroldson and Frey, 2005). There were a total of 26 documented grizzly bear mortalities in 2004, of which 19 were known human-caused deaths, five were natural mortalities, and two were of undetermined causes (Haroldson and Frey, 2005). All other recovery parameters were met in 2004 (Schwartz et al., 2005). The number of females with cubs has surpassed the recovery criterion for a number of years (Haroldson, 2005) and bears now occur where they have not been reported for many years. A total of 49 unduplicated females with 96 cubs were documented in the Greater Yellowstone Ecosystem in 2004 (Haroldson, 2005). With this, the 6-year running average of females with cubs within the Recovery Zone and a 10-mile perimeter has gradually increased from 15 in 1986 to 40 in 2004. The mean litter size of two in 2004 was consistent with past years (Haroldson, 2005).

On November 17, 2005, the Service announced that the Yellowstone Grizzly Bear Ecosystem is a recovered population no longer meeting the Endangered Species Act's definition of *threatened* or *endangered* (70 FR 69854, November 17, 2005). This population has increased from estimates as low as 136 individuals when listed in 1975 to more than 580 animals as of 2004; this population has been increasing since the mid 1990s and is increasing at 4 to 7 percent per year. The range of this population also has increased dramatically as evidenced by the 48 percent increase in occupied habitat since the 1970s. Yellowstone grizzly bears continue to increase their range and distribution annually and grizzly bears in the Yellowstone area now occupy habitats they have been absent from for decades. Currently, roughly 90 percent of females with cubs occupy the Primary Conservation Area (PCA) and about 10 percent of females with cubs have expanded out beyond PCA within the ecosystem.

The Yellowstone Grizzly Bear Ecosystem now represents a viable population which has sufficient numbers and distribution of reproductive individuals so as to provide a high likelihood that the species will continue to exist and be well distributed throughout its range for the foreseeable future. The State and Federal agencies' agreement to implement the extensive Conservation Strategy and State management plans will ensure that adequate regulatory mechanisms remain in place and that the Yellowstone grizzly bear population will not become an endangered species within the foreseeable future throughout all or a significant portion of its range. Therefore, based on the best scientific and commercial information available, the Service delisted GYE grizzly bears on 29 March, 2007 and this population currently does not have protected status under the ESA.

Status of grizzly bears in the CYE and SE

The Cabinet/Yaak Ecosystem in northwestern Montana and northeastern Idaho has over 1,900 square miles of forested and mountainous habitat occupied by grizzly bears. The population in the Cabinet Mountains portion of this area is thought to be less than 15 bears. The Yaak section of the CYE currently supports a minimum of approximately 20 bears. The Yaak population estimate does not include credible reports from the public of grizzly bear observations, which suggest a population estimate of 20 to 30 bears in the Yaak section of the CYE would be conservative (Kasworm et al. 2000). Grizzly bears occur to the north of the U.S.-Canada border, and interchanges of radio-collared bears across the border have been documented (U.S. Fish and Wildlife Service, 1993).

The Selkirk Ecosystem of northwestern Idaho, northeastern Washington, and southeastern British Columbia includes about 1,080 square miles in the U.S. portion and about 875 square miles in the Canadian portion of the recovery zone. The Selkirk recovery zone is the only defined grizzly bear recovery zone that includes part of Canada because the habitat in the U.S. portion is not of sufficient size to support a minimum population. The habitat is contiguous across the border and radio-collared bears are known to move back and forth across the border. Therefore, the grizzly bears north and south of the border are considered one population (U.S. Fish and Wildlife Service, 1993).

Neither the CYE nor the SE grizzly bear populations have attained the Recovery Plan criteria for females with cubs. Population trend information is statistically inconclusive, though the point estimate of the rate of increase declined during 1999 to 2004 (Kasworm et al. 2000, Kasworm 2001, Kasworm et al., 2004) in the CYE. The Service determined that the combined SE-CYE grizzly bear recovery zones were warranted endangered but precluded in 1999 and suggested that the two populations might be inter-connected (FR 26725-26733).

The most recent data indicate that population status is below recovery goals in the CYE for the distribution of females with young in bear management subunits and exceeds the 6-year average of female mortality in the recovery zone (Kas-

worm et al., 2005). Montana Fish, Wildlife and Parks began augmenting the grizzly bear population in the Cabinet Mountains in 2005.

Status of the Selway-Bitterroot and North Cascades Ecosystems

Grizzly bear recovery efforts in the Selway-Bitterroot Ecosystem and North Cascades Ecosystem are in the planning stages. In the North Cascades Ecosystem, most of the grizzly bear population occurs north of the Canada - U.S. border, but a few grizzly bears persist south of the border. Though suitable habitat remains, grizzly bears were extirpated from the Selway-Bitterroot Ecosystem decades ago. The Service released a final environmental impact statement and decision notice addressing the impacts of reintroducing grizzly bears into the Bitterroot Ecosystem in east central Idaho (U.S. Fish and Wildlife Service, 2000).

Analysis of the species/critical habitat likely to be affected

The biological assessment determined that continued implementation of the Butte Resource Management Plan would likely adversely affect individual grizzly bears that occur in the RMP area. Grizzly bears are listed as threatened under the Act. Critical habitat has not been designated for this species; therefore none would be affected by the proposed action.

IV. ENVIRONMENTAL BASELINE

Under the provisions of section 7(a)(2), when considering the "effects of the action" on listed species, the Service is required to consider the environmental baseline. Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed federal projects in the action area that have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress.

Action area, as defined by the Act, is the entire area to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. For the purposes of this biological opinion, we have defined the action area to be that portion of the RMP area where grizzly bears occur outside of the NCDE recovery zone.

Status of the Species within the Action Area

Grizzly bears are now found on BLM lands managed by the Butte Field Office along the Continental Divide in Lewis and Clark County, Montana, outside of the NCDE recovery zone.

Factors Affecting Species Environment within the Action Area

The environmental baseline is described here in terms of those program areas that affect grizzly bears either through human contact and conflict or through reductions in secure habitat. These program areas include access management, sanitation/food storage, and livestock grazing. The recreation program may also impact grizzly bears, but access and sanitation/food storage are those elements of the recreation program that may adversely affect grizzly bears.

Access Management

Grizzly bears occur on BLM lands outside the recovery zone along the Continental Divide in Lewis and Clark County, Montana. Habitat for grizzly bears is generally of lower quality than areas inside the recovery zone due to high road densities found on state and private lands. Complete road inventories for these areas have not been completed, however a recent BLM analysis of the Hoodoo watershed in Powell County showed that across all ownerships, total road density was 2.45 mi/mi^2, and open road density was 1.54 mi/mi^2. On BLM managed lands, total road density was 1.12 mi/mi^2, while open road density was 0.68 mi/mi^2 (James Sparks Personal Communication), well below the standard for open road density for lands within the recovery zone. The proposed action would allow no net increase in permanent roads built in areas where open road densities are 1 mi/mi^2 or less in big game winter and calving ranges, and within the current distribution of grizzly bear. The proposed action would also manage to reduce open road densities in big game winter and calving ranges, and within the current distribution of grizzly bear where they currently exceed 1 mi/mi^2.

Sanitation/Food Storage

Food Storage Special Order LC00-18 (U.S. Forest Service, 2000) is in effect for all National Forests within the NCDE recovery zone. Similar food storage orders have been in place since 1995. The proposed Butte RMP would require the development and implementation of human food storage regulations and guidelines in grizzly bear distribution zones in coordination with Montana Department of Fish, Wildlife, and Parks and other agencies.

The purpose of the food storage order would be to minimize grizzly bear/human conflicts and thereby provide for visitor safety and recovery of the grizzly bear.

No grizzly bear mortalities have been reported and no management actions towards grizzly bears associated with improper food storage have occurred in the action area (Sarah LaMarr, pers. comm.). Although the adoption of food storage guidelines is likely to effectively prevent food conditioning of grizzly bears on BLM lands, food conditioning of grizzly bears may occur on adjacent lands and thus could potentially lead to grizzly bear management actions on BLM lands as food-conditioned bears move from adjacent lands on to BLM lands.

Livestock Grazing

The Butte RMP area has no sheep allotments either inside or outside of a recovery zone. Therefore, no grizzly bear deaths have occurred on BLM lands as a result of sheep grazing. There are no cattle allotments within the recovery zone however there are active cattle allotments in the action area outside of the recovery zone. There have been no grizzly bear deaths or management removals of grizzly bears on BLM lands or due to BLM grazing program activities.

The Montana legislature has created policy to direct MFWP to protect, conserve, and manage grizzly bears as a rare species of Montana wildlife. With this in mind, the Fish, Wildlife & Parks Commission developed a grizzly bear policy (Section 12.9.103, ARM) to address the need to protect grizzly bear habitat, the need to pursue grizzly research, the role of sport hunting in grizzly bear management, depredations, and the appropriate department response to depredations, and requires compliance with federal regulations relating to grizzly bears (Montana Fish, Wildlife and Parks 2001). Under this direction, MFWP has implemented a conservation program to manage and enhance grizzly bear populations. In 2002, MFWP prepared the Grizzly Bear Management Plan for Southwestern Montana 2002-2012 and Final Programmatic Environmental Impact Statement with input from the Montana Grizzly Bear Working Group and other interested parties (Montana Fish, Wildlife and Parks 2002).

V. EFFECTS OF THE ACTION

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, with the effects of other activities interrelated or interdependent with that action. Indirect effects are those caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). The effects of the action are added to the environmental baseline to determine the future baseline and to form the basis for the determination in this opinion. Should the federal action result in a jeopardy situation and/or adverse modification conclusion, the Service may propose reasonable and prudent alternatives that the federal agency can take to avoid violation of section 7(a)(2). The effects discussed below are the result of direct and indirect impacts of implementing the proposed project.

The effects of the action section will address the programmatic issues of access management, sanitation/food storage, and livestock grazing. Based on the history of project level consultation with the U.S. Forest Service and BLM, we conclude that implementation of actions under the RMP within these three program areas have the highest likelihood of adversely affecting grizzly bears either through human contact and conflict or through reductions in secure habitat.

Access Management

The IGBC Taskforce provided standardized definitions for roads and standardized methods to measure road densities and define analysis areas as a result of grizzly bear research information on open and total road densities and grizzly bear core areas (Interagency Grizzly Bear Committee 1994, 1998). The Service considers the management of roads one of the most important factors in grizzly bear habitat conservation and the IGBC Taskforce guidelines as the best direction with which to manage roads on Federal lands. This section focuses on analysis and discussion of the direct and indirect effects of the BLM's motorized access management on the grizzly bear and on the environmental baseline as affected by existing road densities.

General Effects of Roads on Grizzly Bears

Research has confirmed the adverse impacts of roads on grizzly bears (Mace et al. 1996, Mace et al. 1999). Negative impacts associated with roads and excessive road densities influences grizzly bear population and habitat use patterns in numerous, widespread areas. The Grizzly Bear Compendium (Interagency Grizzly Bear Committee 1987) summarized impacts reported in the literature including:

- Avoidance/displacement of grizzly bears away from roads and road activity;
- Changes in grizzly bear behavior, especially habituation to humans, due to ongoing contact with roads and human activities conducted along roads;

- Habitat loss, modification, and fragmentation due to roads and road construction, including vegetative and topographic disturbances; and
- Direct mortality from road kills, legal and illegal harvest, and other factors resulting from increased human-bear encounters.

Habituation and mortality

Mortality is the most serious consequence of roads in grizzly bear habitat. Mortalities result directly from collisions with vehicles and illegal shooting or indirectly through habituation to human presence. Continued exposure to human presence, activity, noise, and other elements can result in habituation, which is essentially the loss of a grizzly bear's natural wariness of humans. High road densities and associated increases in human access into grizzly bear habitat can lead to the habituation of grizzly bears to humans. Habituation in turn increases the potential for conflicts between people and grizzly bears. Habituated grizzly bears often obtain human food or garbage and become involved in nuisance bear incidences, and/or threaten human life or property. Such grizzly bears generally experience high mortality rates as they are eventually destroyed or removed from the population through management actions. Habituated grizzly bears are also more vulnerable to illegal killing because of their increased exposure to people. In the Yellowstone region, humans killed habituated grizzly bears over three times as often as non-habituated grizzly bears (Mattson et al., 1992).

The specific relationship between roads and the mortality risk to grizzly bears is difficult to quantify. The level of human use of roads is one of several factors influencing the mortality risk associated with any road. Research supports the premise that roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the risk of mortality to grizzly bears. Grizzly bears were increasingly vulnerable to illegal and legal harvest as a consequence of increased road access by humans in Montana (Mace et al., 1987) and in the Yellowstone region (Mattson et al., 1992). In southeastern British Columbia, McLellan and Shackleton (1988) reported roads increased access for legal hunters and poachers, the major source of adult grizzly mortality. McLellan (1989b) reported that 7 of 13 successful legal hunters interviewed had been on a road when they harvested their grizzly bear. McLellan and Mace (1985) found that a disproportionate number of mortalities occurred near roads. In the Yellowstone ecosystem, Mattson and Knight (1991) reported that areas influenced by secondary roads and major developments were most lethal to grizzly bears. Aune and Kasworm (1989) reported 63 percent of known, human-caused grizzly bear deaths on the east front of the Rocky Mountains occurred within 1 kilometer (0.6 miles) of roads, including 10 of 11 known female grizzly bear deaths. In Montana, Dood et al. (1986) reported that 48 percent of all known, non-hunting mortalities during the period of 1967 through 1986 occurred within 1 mile of roads. Grizzly bears were also killed by vehicle collision, the most direct form of road-related mortality (Greer 1985, Knight et al., 1981, Palmisciano, 1986).

Several analyses on grizzly bear mortalities for the NCDE have been completed. During 1992-2001, Montana Fish, Wildlife and Parks reported a total of 157 known grizzly bear deaths (including cubs) were attributed to the following sources (percents have been rounded to the nearest whole number): 20 percent (32) management removal due to food conditioning; 13 percent (21) due to illegal, malicious killing; 11 percent (18) due to train collisions; 10 percent (16) under investigation; 8 percent (12) illegal mistaken identification; 8 percent (12) livestock conflicts; 6 percent (9) legal self defense; 6 percent (9) related to human fatalities; 5 percent (8) natural; 4 percent (6) human fatality; 3 percent (5) vehicle collision; 3 percent (5) unknown; 3 percent (4) capture related. A total of 143 of these grizzly bear deaths were known human-caused: 22 percent (32) management removal due to food conditioning; 15 percent (21) due to illegal, malicious killing; 13 percent (18) due to train collisions; 11 percent (16) under investigation; 8 percent (12) illegal mistaken identification; 8 percent (12) livestock conflicts; 6 percent (9) legal self defense; 6 percent (9) related to human fatalities; 3 percent (5) vehicle collision; 3 percent (5) unknown; 3 percent (4) capture related (U.S. Fish and Wildlife Service 2002). During this period 12 females and six cubs were removed from the population due to management removal.

During 1999-2005, 146 known human-caused grizzly bear mortalities were reported in the NCDE (U.S. Fish and Wildlife Service *in litt.* 2006b). They were attributed to the following causes: 54 management removals related to human food/livestock; 30 train and vehicle collision; 41 malicious illegal; 14 legal self-defense/hunter; 3 management removals related to a human fatality; and 4 handling. Of the human-caused mortalities during this period, 63 were female, 69 were male and 14 were unknown (U.S. Fish and Wildlife Service *in litt*., 2006b).

Subadult grizzly bears are more often vulnerable to habituation and illegal killing or they conflict with people and are removed through management action. Subadult grizzly bears frequently traverse long distances or unknown territory, increasing the likelihood of encountering roads, human residences or other developments where human food or other attractants are available, increasing the potential for habituation and/or conflicts with people. Between 1988 and 1993, six of seven grizzly bear management removals from the Flathead National Forest and surrounding area involved subadults (U.S. Forest Service, 1994a, 1994b). In the Yellowstone ecosystem, roads impacted individual age and sex classes

of grizzly bears differently. Subadults and females with young were most often located near roads, perhaps displaced into roaded, marginal habitat by dominant grizzly bears (Mattson et al., 1987, Mattson et al., 1992).

Known, human-caused grizzly bear mortality in the South Fork Study area during the 6-year period of 1988 through 1994 appears relatively high when compared to other studies. During a 9-year period of research in southeastern British Columbia, McLellan (1989b) reported fewer human-caused grizzly bear mortalities (11) than occurred during 6 years of research in the South Fork Study area (13) (excluding legal hunter and research-caused mortalities). Although the British Columbia study area was roaded for gas exploration, timber harvest and other uses, the area had few permanent human residents and generally received lower use by humans than did the South Fork Study area in Montana. In 1994, grizzly bear population trajectories for the two study areas were computed (Servheen et al., 1994). In the British Columbia study area, high survivorship rates of adult and subadult females resulted in an upward trend in the grizzly bear population. In the South Fork Study area, relatively low adult and subadult female survivorship rates resulted in an annual decline in the grizzly bear population. Adult female grizzly bear mortality was the most important factor in determining trend, and most known grizzly bear mortalities were determined to be human-caused.

The presence of roads alone does not necessarily result in direct mortality of grizzly bears, but the proximity of the land to human population centers, resulting high numbers of people using roads, and dispersed recreation in habitat around roads can pose considerable risks to grizzly bears. Social values and attitudes also contribute to the level of mortality risk to grizzly bears. Incidental or accidental human-caused grizzly bear mortality, combined with a few individuals intent on illegally shooting grizzly bears, can collectively result in serious, detrimental effects to grizzly bear populations. Access management can be instrumental to reducing mortality risk to grizzly bears by managing the present and anticipated future road use-levels resulting from continued timber harvesting and the increasing human population in western Montana.

Displacement and Security

Some grizzly bears, particularly subadults, readily habituate to humans and consequently suffer increased mortality risk. However, many grizzly bears under-use or avoid otherwise preferred habitats that are frequented by people. Such under-use of preferred habitat represents modification of normal grizzly bear behavior. Negative association with roads arises from the grizzly bears' fear of vehicles, vehicle noise, and other human-related noise around roads, human scent along roads and hunting and shooting along or from roads. Grizzly bears that experience such negative consequences learn to avoid the disturbance and annoyance generated by roads. Such animals may not change this resultant avoidance behavior for long periods after road closures. Even occasional human-related vehicle noise can result in annoying grizzly bears to the extent that they continue to avoid roads.

All factors contributing to direct links between roads and displacement from habitat have not been quantified. As with mortality risk, the level of road-use by people is likely an important factor in assessing the potential displacement caused by any road. Contemporary research, however, indicates that grizzly bears consistently were displaced from roads and habitat surrounding roads, often despite relatively low levels of human use (Mattson et al. 1987, McLellan and Shackleton 1988, Aune and Kasworm 1989, Kasworm and Manley, 1990; Mace and Manley, 1993; Mace et al., 1996).

In Montana, Aune and Stivers (1982) reported that grizzly bears avoided roads and adjacent corridors even when the area contained preferred habitat for breeding, feeding, shelter, and reproduction. McLellan and Shackleton (1988) found that grizzly bears used areas near roads less than expected in southeastern British Columbia and estimated that 8.7 percent of the total area was rendered incompatible for grizzly bear use because of roads. In Montana, Mace and Manley (1993) reported use of habitat by all sex and age classes of grizzly bears was less than expected in habitats where total road densities exceeded 2 miles per square mile. Twenty-two percent of the South Fork Study area exceeded 2 miles per square mile. Adult grizzly bears used habitats less than expected when open motorized access density exceeded 1 mile per square mile. Further, female grizzly bears in the South Fork Study area tended to use habitat more than 0.5 mile from roads or trails greater than expected. As traffic levels on roads increased, grizzly bear use of adjacent habitat decreases (Mace et al., 1996). In Yellowstone, Mattson et al. (1992) reported wary grizzly bears avoided areas within 2 kilometers (1.2 miles) of major roads and 4 kilometers (2.4 miles) of major developments or town sites.

Research suggests that grizzly bears benefit from road closures aimed at minimizing traffic on roads within important seasonal habitat, especially in low elevation habitats during the spring (Mace et al., 1999). When roads are located in important habitats such as riparian zones, snowchutes and shrub fields, habitat loss through avoidance behavior can be significant. Mace et al. (1996) found that most of the roads within grizzly bear seasonal ranges were either closed to vehicles or used infrequently by humans. Some grizzly bears avoided areas with a high total road density even when the roads were closed to public travel. If human-related disturbances such as road use or timber harvest continue in preferred habitats for extended periods of time, grizzly bear use of the area may be lost, particularly use by female grizzly bears. In the Swan Mountain study (Mace et al., 1996), female grizzly bear home range selection of unroaded cover types was greatest and as road densities increased, selection declined. Zager (1980) reported the avoidance of roads by females

with cubs. Aune and Kasworm (1989) and McLellan (1989a) found that female cubs generally established their home range within or overlapping with their mother's home range, where as males generally dispersed from their mother's home range. Long-term displacement of a female from a portion of her home range may result in long-term under-use of that area by female grizzly bears because cubs have limited potential to learn to use the area. In this way, learned avoidance behavior could persist for several generations of grizzly bears before grizzly bears again utilize habitat associated with closed roads. Thus, displacement from preferred habitats may significantly modify normal grizzly bear behavioral patterns.

Grizzly bears can also become conditioned to human activity and show a high level of tolerance especially if the location and nature of human use are predictable and do not result in overtly negative impacts for grizzly bears (Mattson, 1993). In Glacier National Park, Jope (1985) suggested grizzly bears in parks habituate to high human use and showed less displacement, even in open habitats. Yonge (2001) found that grizzly bears near Cooke City, Montana, were willing to consistently forage in very close proximity to high levels of human use if cover was sufficient and energetically efficient feeding opportunities were present. Both Mattson (1993) and Yonge (2001) postulated that areas with higher levels of human activity might have a positive effect for bears by serving as a kind of refugia for weaker population cohorts (subadults and females with cubs) seeking to avoid intra-specific competition (adult males). However, Mattson qualified this observation by adding that the beneficial effects vary as to whether hunting is allowed, and how closely the human population is regulated. Further, food conditioned grizzly bears were much more likely to be killed by humans.

Both Yonge (2001) and Mattson (1993) indicated that increases in human use levels can be deleterious if some human activities are unregulated, such as use of firearms, presence of attractants, nature and duration of human uses. Conversely, a level of coexistence between humans and grizzly bears can be achieved if such activities are controlled. Near Cooke City, Montana, the New World Mine reclamation project had minimal effects on grizzly bears, in part because reclamation activities were temporally and spatially predictable and people associated with the work were carefully regulated against carrying firearms or having attractants available to grizzly bears (Tyers, unpublished 2006). In the Swan Valley of Montana, raw location data from a small number of collared grizzly bears show nocturnal use of highly roaded habitat (C. Servheen, pers. comm. 2005). The Swan Valley data have not been statistically analyzed and the study was not designed to determine the impact of roads on bears, sample size is very small, and perhaps most importantly, mortality rates for these grizzly bears are not yet known. However, these data indicate that some grizzly bears can apparently habituate to relatively high levels of human activity.

Low-elevation riparian habitats are of significant seasonal importance to grizzly bears in the YGBE. Grizzly bears typically use the lowest elevations possible for foraging during spring. Craighead et al. (1982) described the value of low-elevation habitats to grizzly bears. The MFWP concluded that maximum numbers of grizzly bears can be maintained only if the species continues to have the opportunity to use both the temperate and subalpine climatic zones (Dood et al. 1986).

Research identified the following individual home-range selection patterns in local grizzly bear population segments: (1) some individual animals live almost exclusively (except for denning) in low elevation habitats; (2) other individuals maintain home ranges in more mountainous or remote locations; and (3) some individuals migrate elevationally on a seasonal basis (Servheen 1981, Aune and Stivers 1982).

Specific causes or factors involved in the selection or preferences for certain home ranges by grizzly bears are not well understood. Mace and Manley (1993) found that grizzly bear home ranges in the South Fork Study area included remote areas in high elevations. South Fork Study grizzly bear habitat-use data, road density analyses of the South Fork Study area, previous studies, and CEM analysis (U.S. Forest Service, 1994a, Mace et al., 1999) suggested that low-elevation habitats were not freely available to grizzly bears because of high road densities and associated human use in these areas. High road densities in low-elevation habitats may result in avoidance of or displacement from important spring seasonal habitat for some grizzly bears or high mortality risk for those individuals that venture into and attempt to exploit resources contained in these low-elevation areas.

Core areas

The Service considers significant declines in expected use of habitat by grizzly bears a serious consequence of high road densities. Significant declines in grizzly bear use of MS-1 habitat (habitat areas within a recovery zone that are key to the survival of the grizzly where seasonal or year-long activity, under natural, free-ranging conditions is common), especially those habitat components with high seasonal values, indicate that habitat needed for survival and recovery is less available. Ideal grizzly bear habitat provides some areas isolated from excessive levels of human impact. Because grizzly bears can conflict with humans and their land uses, grizzly bear populations require a level of safety from direct human-caused mortality and competitive use of habitat such as settlement, roading, recreation, excessive logging, mining and livestock grazing.

Analysis in the South Fork Study area (Mace and Manley, 1993, Mace et al., 1996) indicated the importance of unroaded habitat, especially for females with cubs. Mace and Manley (1993) reported adult females used habitat further than 0.5 mile from roads or trails more than expected; 21 percent of the composite home range had no trails or roads and 46 percent was unroaded (greater than 0.5 mile from a road). Substantive blocks of unroaded habitat were components of all adult female home ranges. Of the adult female locations within unroaded polygons, 83 percent occurred within 7 polygons that exceeded 2,260 acres in size. Based on grizzly bear habitat use data from the Yellowstone ecosystem, Mattson (1993) recommended that micro scale security areas in that region be an absolute minimum of 6 kilometers (3.6 miles) in diameter or 28 square kilometers (10 square miles) and should be secure for a minimum period of 5, or preferably 10, years.

The IGBC Taskforce (Interagency Grizzly Bear Committee, 1994) recognized the importance of secure areas to grizzly bears. The Taskforce defined "core areas" as those areas with no motorized access (during the non-denning period) or heavily used foot/livestock trails, providing some level of secure habitat for grizzly bears. Motorized use, such as snowmobiling or that associated with timber harvest, could occur within core areas during the denning (winter) period. The Taskforce recommended the establishment of core areas in all recovery zone subunits, the size of core area should depend on ecosystem-specific habitat conditions, and that a core area remain intact on the landscape for at least 10 years. In the South Fork Study area of the NCDE, approximately 68 percent of the adult female composite home range was core area (U.S. Forest Service in litt. 1994, K. Ake, U.S. Forest Service, pers. comm., 2005).

Effects of Roads in the Action Area

Continued implementation of the Butte RMP impacts grizzly bears outside of the recovery zone. Grizzly bears have been and will continue to be impacted to varying degrees by existing road densities, road use, decreasing road densities in some areas, salvage harvest, recreation activity in all seasons, legal big game hunting, routine land management tasks, and natural changes in habitats in the ecosystem. Routine management includes road and facilities maintenance and wildlife improvement projects.

Portions of the action area have high levels of activity along roads while other portions have low activity along roads or no roads at all. Adverse effects from access management on the resource area may be resulting in the displacement of individual grizzly bears, the avoidance of suitable habitat and/or the reduction of habitat to an unsuitable condition. High road densities and lack of core or secure areas exist across many areas outside the NCDE recovery zone. However, the overall habitat condition within the NCDE recovery zone is of high quality and grizzly bear populations are increasing.

The Butte RMP would preclude additional permanent road construction in grizzly bear distribution where such construction would result in road densities exceeding 1 mi/mi^2, total road miles would decrease in those areas of grizzly bear distribution that currently exceed the 1 mi/mi^2 road density standard. Periodic new road construction may occur, but overall there would be a downward trend in the miles of roads in grizzly bear habitat. The Service concludes that it is reasonable to assume that under the RMP, the level of permanent roads in areas outside the recovery zone will not substantively increase during the life of the RMP, with some local exceptions. This assumption is based on the objectives and standards contained in the proposed action as well as recent history and trends in road building and decommissioning in an adjacent BLM field office that show fewer permanent roads on the landscape. For example, in the Hoodoo Mountain watershed, a primary grizzly bear habitat in the Garnet RMP area, open road densities are 0.50 mi/mi^2, and total road densities are 1.12 mi/mi^2 on BLM lands (Tables 2 and 3). These road density measures are well below those determined to result in adverse effects to grizzly bears. However, current high open and total road densities in some areas outside of the recovery zone, may result in adverse effects to grizzly bears attempting to live in these areas. These roads and any new roads constructed in the future may adversely impact grizzly bears' ability to find food resources, breed and raise young, and find shelter.

Table 2. Total road density; open road density during fall; and open road density during spring, summer, and winter on BLM lands located in the Hoodoos Watershed Analysis Boundary, Missoula BLM Field Office.

Road Density	Pre-Treatment	Post-Treatment	Compliance
Total Road Density	1.12 mi/mi²	1.18 mi/mi²	N/A
Open Road Density (fall)	0.50 mi/mi²	0.52 mi/mi²	yes
Open Road Density (spring, summer, and winter)	0.68 mi/mi²	0.70 mi/mi²	yes

Table 3. Total road density; open road density during fall; and open road density during spring, summer, and winter in the Hoodoos Watershed Analysis Boundary (all ownerships) Missoula BLM Field Office.

Total Road Density	2.45 mi/mi²	2.45 mi/mi²	N/A
Open Road Density (fall)	0.96 mi/mi²	0.98 mi/mi²	yes
Open Road Density (spring, summer, and winter)	1.54 mi/mi²	1.56 mi/mi²	no

Under the RMP, temporary roads built for resource extraction such as timber harvest or mining may remain on the landscape for several years and receive a substantial amount of use. Such roads may also cause temporary adverse effects to grizzly bears, such as displacement from key habitats. The Service expects that temporary roading will occur on lands within the distribution of grizzly bears on the Butte RMP area, outside the recovery zone. The Service also anticipates some level of adverse effects to grizzly bears with home ranges impacted by these temporary roads. However, effects would be moderated if the BLM continues its record of decommissioning temporary roads. In addition, on adjacent Helena National Forest lands inside the recovery zone, road densities have been decreasing in recent years leading to improved conditions for grizzly bears in the area managed primarily for their recovery (Forest Service, 2006).

Sanitation/Food Storage

This section focuses on analysis and discussion of the direct and indirect effects to grizzly bears related to sanitation and food storage issues. Mortality of grizzly bears may occur indirectly through habituation to human presence. Also refer to the 'habituation and mortality' subsection in the 'General Effects of Roads on Grizzly Bears' section for further discussion on habituation.

General Effects of Sanitation/Food Storage and Habituation

Human-caused mortality of grizzly bears results from management action, train and auto collision, trapping during research or management action, defence of human life and property, and illegal killing. Grizzly bear-human conflicts resulting in management removal of grizzly bears habituated to human foods or livestock is a leading cause of grizzly bear mortality in the NCDE (U.S. Fish and Wildlife Service, 2004). The number of management removals is exceeded only by legal hunting that was discontinued in 1991.

The Service is concerned with the significant number of grizzly bear mortalities resulting from habituation and conditioning to human-related foods. An increasing trend is observed in human-caused grizzly bear mortality in the NCDE. The 31 known human-caused grizzly bear mortalities in 2004 was a 29-year high. From 1999 to 2004, the number of grizzly bears removed for conflicts related to human food and livestock depredation increased from 6 to 13 (U.S. Fish and Wildlife Service, 2004), 35 percent and 42 percent of the total mortalities for the respective year. Grizzly bears face management action on public lands and other land ownerships. Consistently, mortalities from human-related causes occurred on private lands in the NCDE greater than any other land ownership (Mace and Waller 1998, U.S. Fish and Wildlife Service, 2004). Grizzly bears using the interface of rural roaded and multiple-use lands in the Swan Mountains suffered a significantly higher rate of human-caused mortality than individuals using only the multiple-use lands on the Forest (Mace and Waller, 1998).

Permanent or seasonal human residences and livestock facilities with improperly stored garbage, livestock or pet foods can lure grizzly bears to private property and are particular sources of grizzly bear food conditioning. Food conditioned grizzly bears enter unsecured garbage receptacles, sheds and other buildings in search of a reward. In the NCDE in 2004, 10 mortalities were associated with buildings and garbage; three mortalities involved buildings and grain (U.S. Fish and Wildlife Service, 2004). Accessibility to human related attractants and conditioning to those rewards can lead to management removal and to mortality of grizzly bears by people defending their life and property.

Mace and Waller (1998) studied grizzly bear movements in three types of access situations in the Swan Mountains in Montana: multi-use Forest Service lands, unroaded wilderness with no permanent human dwellings, and roaded rural areas adjacent to multiple-use zones and composed of private lands with roads and developed for permanent homes, farms, or service facilities. Grizzly bears spent varying amounts of time in the three zones. Grizzly bears in rural roaded and wilderness areas faced 21 and 15 times increased risk of human-caused mortality than those bears using multiple-use lands only. The researchers recommended that where concentrated human uses occur on public lands and human foods and attractants are present on private lands, efforts to minimize grizzly bear exposure to these elements is important to

increasing grizzly bear numbers and improve long-term population trend. Also, the authors suggested more public road closures would be of limited mitigative value for decreasing grizzly bear mortality.

Grizzly bears face direct mortality risks on public land relatively infrequently in the NCDE. Management action due to human food habituation does occur. However, on Forest Service administered lands, grizzly bear mortalities more often resulted from mistaken identity during legal hunting season, illegal or malicious killing, or automobile collision (U.S. Fish and Wildlife Service 2004). Glacier National Park receives an average of 1.7 million visitors a year with concentrated use in developed areas and dispersed in the backcountry (National Park Service 2005). Between 1980 and 2002, only 10 grizzly bear mortalities were attributed to management action due to human-related foods in Glacier Park (U.S. Fish and Wildlife Service, in litt., 2003). In comparison, in 2004 alone, 13 grizzly bears were removed from private lands within the NCDE because of habituation.

Ake et al. (1998) summarized human-caused grizzly bear mortality locations for the period 1984 to 1996. An estimate of the amount of time grizzly bears spent in rural, roaded, and backcountry area (Mace and Waller 1998) was then compared with mortality locations. Although grizzly bears spent less than 5 percent of time in rural settings, 56 percent of human-caused grizzly bear mortality occurred in rural roaded areas. Grizzly bear mortality data collected since 1998 support the premise of increased risk to grizzly bears in rural roaded areas. In the NCDE, mortalities associated with roaded rural (private) areas exceeded the sum of mortalities from Forest Service roaded areas and areas away from roads. Distribution data from 2003 and 2004 show a pattern of management removals at the interface of public and private lands in the NCDE (U.S. Fish and Wildlife Service 2004). BLM lands in the action area tend to be more scattered, and intermingled with private and state-owned lands than the Forest Service Lands referenced above. For this reason, despite the low probability of bears becoming food conditioned on BLM lands, BLM lands may be more likely to host bears conditioned on other ownerships.

Grizzly bears habituated and conditioned to human foods in the GYE also ranged closer to human developments and suffered higher mortalities than their more wary counterparts (Mattson et al., 1992). Gunther et al. (2004a) reviewed grizzly bear-human conflicts in the GYE between 1992 and 2000. The second highest source of human-caused grizzly bear mortality included livestock depredation and anthropogenic foods. Defense of human life and property resulted in the highest level of mortalities. Although no distinct geographic concentrations of mortalities were evident, most management removals occurred outside of the Yellowstone recovery zone and on private land. In 2003, 85 percent of human-grizzly bear conflicts involved human foods or livestock; 71 percent of conflicts were concentrated in three areas of mixed ownership to the east of Yellowstone National Park (Gunther et al., 2004b). Two of 12 known human-caused grizzly bear mortalities reported in the GYE in 2003 resulted from site conflicts involving anthropogenic food; both removals occurred on private property (Haroldson and Frey, 2004).

Yellowstone National Park received close to 3 million visitors, approximately 670,000 automobile campground use nights, and 43,000 backcountry campers from 2000 through 2003 (Gunther, 2004). One-hundred and four known grizzly bear mortalities occurred in the GYE, 15 in Yellowstone National Park, during that 4-year period (Haroldson and Frey 2000, 2001, 2002, 2003). Habituation and food conditioning was not identified as a source of human-caused grizzly bear mortality. Vehicle collisions, wolf predation, natural processes and unknown (2 individuals) were causes of grizzly bear deaths in the Park. Grizzly bear mortalities occurred more frequently on National Forest lands and private lands surrounding Yellowstone National Park than within the park boundary. Conflicts with hunters were a major source of grizzly bear death on National Forest lands. Nuisance removals for property damage, livestock depredation, and food conditioning were primary reasons for mortality on private property.

Incidence of property damage or conflicts associated with human related foods is inversely proportional to the availability of high quality grizzly bear resources; during periods of poor natural food production incidences of human-grizzly bear conflicts increase. When poor seasonal bear foods exist in part or through the entire nondenning season in the GYE, the incidences of bears causing property damage and obtaining anthropogenic foods increased four fold over average or good years (Gunther et al., 2004a). The conflict relationship is magnified when the availability of late season natural foods such as whitebark pine seeds is insufficient to meet the high energy requirements during hyperphagia (Mattson et al., 1992).

Numerous studies in the NCDE elucidate the importance of late-season frugivory, especially globe huckleberries (*Vaccinium globulare*), by grizzly bears (Martinka and Kendall, 1986, Weaver et al., 1990). Berry failure due to drought or destruction of plants by fire would force grizzly bears to range more widely than in normal periods of seasonal availability (Blanchard and Knight, 1991). Therefore, grizzly bears face an increased risk of encounters with humans and ultimately human-caused mortality during the autumn season. Grizzly bears in some areas that avoided trails with human activity during part of the year changed this avoidance behavior when a favored berry resource came into season (Donelon, 2004). Although grizzly bears still had a low tolerance for trails with high human activity, the tendency to approach areas of human activity when nutritional and energy needs are high could put individuals at an increased risk of conflict.

In the NCDE during 1998 and 2004, significant huckleberry crop failures precipitated increased conflicts with grizzly bears (Manley, 2005). During a normal year, a fraction of the grizzly bear population would use natural food sources at low elevations during huckleberry season. In 2004, with the lack of huckleberries at higher elevations, many more grizzly bears used low elevation habitats in search of late summer and fall foods (Manley 2005; R. Mace, Montana Fish, Wildlife and Parks, pers. comm. 2005). The search for food at low elevations puts bears into close proximity to private lands and associated attractants. The number of conflicts and grizzly bear management removals from private and public lands rose dramatically above average. During 2003 and 2004, Montana Fish, Wildlife and Parks Region 1 (encompassing the action area) received over 50 and 225 calls reporting conflicts with grizzly bears, respectively (Manley, 2005). Ninety-five percent were confirmed grizzly bear conflicts and of these, about 95 percent were from private landowners living in or adjacent to grizzly bear habitat. Conflicts involved grizzly bears seeking unnatural foods in yards or actually causing property damage by trying to access foods in vehicles and buildings. Thirty-one grizzly bears were captured in 2004; 40 percent in the summer and 40 percent in the fall, compared to 20 percent captured in the spring. Eighty-eight percent of the captures were on private property, the rest on public lands. In comparison, only 13 grizzlies were captured in 2003, all on private property.

Effects of Sanitation/Food Storage and Habituation in the Action Area

There is a food storage special order in effect for that portion of the NCDE recovery zone managed by the U.S. Forest Service (U.S. Forest Service, 2000). Similar food storage orders have been in place since 1995. There is no food storage order in place for BLM lands, however, the proposed action requires that a food storage strategy be developed that will minimize grizzly bear-human encounters and provide for user safety and the protection of the grizzly bear. A food storage strategy would substantially reduce the potential for adverse effects to bears as a result of food conditioning and habituation. The measures in the food storage requirements would help to reduce the potential for or eliminate human-grizzly bear conflicts and the potential for adverse effects to grizzly bears.

No grizzly bear mortalities or management actions towards grizzly bears associated with improper food storage have been reported on BLM lands within the action area (Sarah LaMarr, pers. comm.). However, food conditioning of grizzly bears occurs on private lands adjacent to BLM lands and the potential for adverse impacts to grizzly bears on BLM lands does exist. Throughout the distribution of grizzly bears, food conditioning remains a fairly serious problem in relation to grizzly bear mortality.

Habituation and food conditioning of grizzly bears is a serious concern in all grizzly bear populations. All agencies follow the IGBC Guidelines (Interagency Grizzly Bear Committee 1986) for nuisance bear management. Within public lands inside recovery zones grizzly bears must be determined to be a nuisance by specific criteria before they can be controlled (Interagency Grizzly Bear Committee, 1986, U.S. Forest Service, 1986). Information in the biological assessment indicates that there have been no grizzly bear conflicts reported and no management removal of bears as a result of food or attractants in the action area. However, as the number of grizzly bears increase and the number of people residing in and visiting the area increase, the number of grizzly bear-human conflicts related to food and attractant storage may increase as well. Therefore, it is reasonable to expect that some risk of adverse impacts to grizzly bears exists.

Livestock Grazing

Effects of livestock grazing on grizzly bears are generally related to depredations of livestock by grizzly bears, disposal of livestock carcasses, storage of human food and stock feed, and grizzly bear habituation, food conditioning and mortality risk associated with these activities. Depredating bears may become food conditioned resulting in management actions that remove bears from the population. The BLM has several cattle allotments but no sheep allotments within the action area.

Although grizzly bear conflicts with cattle do exist, the more significant problems have been with sheep (Orme and Williams, 1986). The adverse effects of domestic sheep grazing on grizzly bears are well documented (Knight and Judd, 1983; Johnson and Griffel, 1982). Sheep grazing in occupied grizzly bear habitat poses substantive risks to grizzly bears since bears kill sheep much more readily than other livestock and because sheep are often closely tended by herders typically armed and protective of their flock. In one study in the YGBE, of 24 grizzly bears known to use livestock allotments, 10 were known to kill livestock (Knight and Judd, 1983). Of these bears, 7 killed sheep and 5 were trapped and instrumented. All but one instrumented grizzly bear cub that had the opportunity to kill sheep did so. Grizzly bears that kill livestock include a range of ages and both sexes (Johnson and Griffel, 1982).

Being an opportunistic feeder, any individual grizzly bear can learn to exploit livestock as an available food source just as easily as they habituate to other human food sources (Johnson and Griffel, 1982). Knight and Judd (1983) reported several differences between cattle and sheep conflicts with grizzly bears. They found that all radio-collared grizzly bears known to have come in close contact with sheep killed sheep, but most grizzly bears that encountered cattle did not make kills. They also found that all known cattle kills were carried out by adult bears 7 years or older, while both adults and

subadults from 1 to 13 year old killed sheep. An attractant such as a sheep allotment outside the recovery zone may draw bears from within the recovery zone and affect recovery of the NCDE grizzly bear population. Grizzly bears that killed sheep, usually took multiple sheep over several days. However in each instance when the sheep were moved out of the area the predation ended (Johnson and Griffel, 1982).

Short term domestic sheep or goat grazing could occur under the Butte RMP in areas occupied or potentially occupied by grizzly bears. Long term effects of this program are expected to improve habitat conditions for wildlife in general, including grizzly bears. It is possible that conflicts with grizzly bears could occur, but are unlikely due to the conservation measures adopted to prevent grizzly bear interactions with sheep in this program (BLM 2007, pg. 33, outlined below).

1. Domestic sheep grazing to control noxious weeds would not be used previous livestock depredations have occurred from grizzly bear and wolves.
2. Domestic sheep would be removed from a project area if depredation or encounters occur from grizzly bears and wolves.
3. Any contracts or agreements to use domestic sheep grazing to control noxious weeds would specify that no control actions against grizzly bears or wolves would be requested by the contractor if depredations or encounters occur as part of the weed grazing action. Any encounters with wolves or grizzly bears would be reported to Montana Fish, Wildlife and Parks and the USDA Wildlife Services.
4. Domestic sheep would be herded, and attended by guard dogs at all times.
5. Temporary, predator-proof electric fencing would be used to protect night bedding areas where potential for predation by grizzly bears or wolves exists.

No grizzly bear mortalities or removals have occurred on BLM lands in the Butte RMP area. However, if the BLM adds sheep, and to a lesser extent cattle, in areas outside the recovery zone the potential for conflicts to occur would be expected to increase. Our concern is that allotments may become attractants for grizzly bears living both in and outside the recovery zone, resulting in grizzly bear mortality sinks.

Effects Summary

BLM lands in the action area outside of the recovery zone are not primarily managed for grizzly bears. As anticipated in the Recovery Plan, grizzly bears are expanding their range outside of the recovery zone. Grizzly bears outside the recovery zone probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. However, a number of grizzly bears are apparently able to live in habitat on BLM lands outside of the recovery zone. As grizzly bears expand their range, it is possible that BLM will experience increasing conflicts involving grizzly bears and people as a result of access management, sanitation/food storage and livestock depredation. This may lead to a grizzly bear being either intentionally or inadvertently killed or removed from the population.

Road density, authorized under the RMP or predating it, has the potential to adversely affect grizzly bears in the action area. Some areas have no motorized activity while other areas receive heavy motorized use. Areas with high road densities may lead to the under-use of suitable habitat by grizzly bears. Access management for the analysis area outside of the recovery zone has not been calculated according to the access protocol. However, a rough depiction of road density was presented in the biological assessment. Road densities are high in the action area in some areas outside the recovery zone. These tend to be areas of private or state land ownership. BLM lands have lower average road densities, with some high densities in localized areas. Inside the recovery zone the U.S. Forest Service provides large amounts of secure habitat and low total and open road densities. We have determined that the NCDE recovery zone includes enough land area to provide for a recovered grizzly bear population (U.S. Fish and Wildlife Service, 1993).

The management of roads in grizzly bear habitat continues to be a difficult management issue. Road reclamation is costly and road use restrictions can be socially contentious. However, the BLM continues to make progress in reducing impacts of motorized transport. We expect that road densities will be reduced in grizzly bear habitat through the implementation of the proposed Butte RMP. The RMP access management guidance outside of the recovery zone provides for use by grizzly bears but likely at lower numbers than for areas inside the recovery zone.

Human access into grizzly bear habitat can lead to the habituation of grizzly bears to humans. Habituation in turn increases the potential for conflicts between people and grizzly bears. Habituated grizzly bears often obtain human food or garbage and become involved in nuisance bear incidences, and/or threaten human life or property. Such grizzly bears generally experience high mortality rates as they are eventually destroyed or removed from the population through management actions. Habituated grizzly bears are also more vulnerable to illegal killing because of their increased exposure to people. No grizzly bear mortalities have been reported on BLM lands related to improper food storage. However, food conditioning occurs on adjacent lands and the potential for adverse impacts to grizzly bears continues to be an issue on the Butte RMP area. BLM has taken actions to minimize adverse effects on grizzly bears as shown above through the

RMP, past accomplishments, and current management direction. As grizzly bears increase in numbers outside of areas with regulated attractant storage, we anticipate an increased risk that grizzly bears would become food habituated and subject to potential management removal. With the commitment in the RMP to develop a food storage strategy, we believe that the contribution of BLM lands to food conditioning of grizzly bears and subsequent conflicts with people would be minimal.

Conflicts arising from livestock grazing are recognized as a source of human-caused mortality of grizzly bears. Grizzly bears habituated to livestock as a food source are more likely to be destroyed or removed from the population due to management control and defense of property actions. Further, as the presence of grizzly bears increase in the action area outside of the recovery zone, we expect an increase in the number of grizzly bears subject to potential management removal as a result of grizzly bear-livestock conflicts. However, the lack of livestock conflicts in the past on BLM lands with cattle allotments suggests that such conflicts will be rare.

Although the BLM's management of grizzly bear habitat outside of the NCDE recovery zone results in direct and indirect adverse effects on individual grizzly bears, we do not anticipate that these effects will have appreciable negative impacts on the NCDE grizzly bear population. Thus we do not expect BLM management outside of the recovery zone to negatively affect recovery of the population. The areas in which the BLM allows continued and expanded road use, does not have a mandatory food storage order are outside of the recovery zone and are not considered to be essential to the conservation of the grizzly bear. The Recovery Plan stated that grizzly bears living within the recovery zone are crucial to recovery goals and hence to delisting. Grizzly bears inside and outside of the recovery zone are listed as threatened under the Act, but only lands inside the recovery zone are considered essential to, and therefore managed primarily for, the recovery and survival of the grizzly bear as a species. In developing the NCDE recovery zone, all areas necessary for the conservation of the grizzly bear were included.

Even though the RMP areas outside the recovery zone are not essential to the conservation of the species, the BLM has managed the lands in such a way that they have allowed grizzly bears to expand into these zones, survive and reproduce. Thus, although access management, sanitation/food storage and livestock grazing may adversely affect individual grizzly bears, we anticipate that grizzly bears will continue to be able to inhabit these areas into the future under the RMP.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

In 2002, Montana Fish, Wildlife and Parks prepared the Grizzly Bear Management Plan for Southwestern Montana 2002-2012 and Final Programmatic Environmental Impact Statement with input from the Montana Grizzly Bear Working Group and other interested parties (Montana Fish, Wildlife and Parks, 2002). This document is expected to be a strategy for initiating, implementing and learning and these efforts and resulting recommended programs will likely become part of the State Grizzly Bear Management Plan. The State Grizzly Bear Management Plan will entail developing a set of plans on the scale of Ranger Districts, Conservation Districts or valleys and local strategies would be cooperatively designed (Montana Fish, Wildlife and Parks, 2002).

Private lands in and adjacent to BLM lands are being developed for residential or business use. The human population in the area has experienced relatively high growth during the recent decade and growth is expected to continue. As more people use private land and adjoining federal land for homes, recreation or business, the challenge to accommodate those uses in ways that continue to protect the grizzly bear population increases. The large federal land ownership, large blocks of wilderness within which human access is restricted by regulation and topography, and highly regulated national park back country serve to reduce the impacts of larger residential human populations on grizzly bears. Recreation, livestock grazing and sanitation issues on private land continue to create grizzly bear- human conflicts. Federal land management cannot entirely compensate for such impacts on private land. However, despite the recent growth of the human population the grizzly bear population in the ecosystem appears, by all reasonable measures, to be increasing as well.

VII. CONCLUSION

After reviewing the current status of the grizzly bear, the environmental baseline for the action area, the effects of the action and the cumulative effects, it is the Service's opinion that the effects of the continued implementation of the Butte RMP on grizzly bears that occur on the resource area outside the NCDE recovery zone are not likely to jeopardize the continued existence of the grizzly bear. No critical habitat has been designated for this species; therefore, none will be affected. Implementing regulations for section 7 (50 CFR 402) define "jeopardize the continued existence of" as to "engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both

the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."

The Service concludes that grizzly bears living outside the recovery zone experience higher levels, in some areas considerably higher levels, of adverse affects from implementation of actions under the RMP than those bears living inside the recovery zone. However, new actions proposed under the Butte RMP serve to conserve grizzly bears and their habitat to varying degrees. As documented earlier, grizzly bears have apparently expanded their range during the past decade and now occur outside the recovery zone. Outside the recovery zone, grizzly bears occur more frequently in some areas within the distribution line than others. Female grizzly bears with young have been observed, leading to the assumption that females are able to establish home ranges and find the resources needed to survive and reproduce outside the recovery zone. Previous RMP direction apparently has been adequate to provide for a number of grizzly bears to exist outside the recovery zone, even though human-caused mortality risk is higher, as are other potential adverse effects.

The Service also concludes that adverse affects to grizzly bears may occasionally occur due to the BLM program direction for access management, sanitation/food storage and livestock grazing outside the recovery zone. The level of impact on BLM lands is not likely to become of serious consequence to the NCDE grizzly bear population.

- The best available information suggests the NCDE grizzly bear population is expanding its range. In part due to grizzly bear expansion into areas that had previously been unoccupied, the number of grizzly bear-human conflicts has increased. Much of the recent grizzly bear mortality is associated with conflicts arising from attractants on private lands. Many of the unprecedented number of conflicts in 2004 can be attributed to the huckleberry crop failure. Despite the recent growth of the human population and the associated increase in the number of grizzly bear-human conflicts and grizzly bear mortalities, the grizzly bear population in the ecosystem appears to be increasing as well (pers. comm. Manley 2005 *in* U.S. Forest Service 2005b). Preliminary population research results show that with 81 percent of the samples analyzed thus far, at least 471 known individual grizzly bears have been identified from samples obtained in the NCDE during 2004 (K. Kendall, USGS, unpublished 2006). Despite the recent years of increased grizzly bear mortality, the Service is cautiously optimistic regarding the NCDE grizzly bear population, based on the best information.

It is the Service's opinion that the level of open and total road densities, and security core areas, within the recovery zone adequately conserves effective grizzly bear habitat and promotes the recovery and survival of the NCDE grizzly bear population. Considering the status of grizzly bear habitat within the recovery zone, it is our opinion that the RMP direction for access management in the action area outside of the recovery zone does not appreciably reduce the likelihood of both the survival and recovery of grizzly bears.

- Inside the recovery zone road densities are moderate and core area is substantial.
- Additionally, the entire NCDE recovery zone contains large amounts of secure habitat and low total and open road densities in the majority of the subunits. For the subunits in the entire NCDE recovery zone that have greater than 75 percent Forest Service ownership, the mean secure habitat is 66.5 percent, the mean TMAD is 15.0 percent and the mean OMAD is 18.1 percent (U.S. Forest Service, 2004; 2005a; 2005b; U.S. Forest Service in litt., 2005;).
- High road density facilitates human access into grizzly bear habitats with a reasonable assumption that an increased frequency of human and bear encounters and adverse impacts to grizzly bears would result. Such high road densities in the action area outside the recovery zone may result in displacement of some grizzly bears. However, some grizzly bears are able to persist in areas with higher levels of human pressure, as documented by reports of grizzly bears, including females with cubs, outside of the recovery zone.
- It is expected that within the distribution of grizzly bears in the RMP area, road densities will be maintained below 1 mi/mi^2 or, in areas where they already exceed that standard, road densities will trend lower until that standard is met.
- In 2001, the OHV EIS decision (U.S. Bureau of Land Management and U.S. Forest Service 2001) closed BLM lands to off-route wheeled motorized travel, significantly reducing the acreage available to wheeled travel and resulting in an increase in grizzly bear secure habitat.
- Further, the Recovery Plan states that recovery zones include areas large enough and of sufficient habitat quality to support recovered grizzly bear populations, and that although grizzly bears are expected to reside in areas outside the recovery zones, only habitat within the recovery is to be managed primarily for grizzly bears.

It is the Service's opinion that the development of a food storage strategy as required by the RMP will contribute to the survival and recovery of the grizzly bear population. Lack of a mandatory food storage order in areas outside the recovery zone may result in grizzly bear-human conflicts and grizzly bear mortalities but this is not likely to jeopardize the

survival and recovery of the NCDE grizzly bear population. We do not anticipate that the level of conflict and grizzly bear mortality occurring under RMP direction would increase to a level that would appreciably reduce the likelihood of both the survival and recovery of the grizzly bears.

- Although food conditioning may occur on private lands adjacent to BLM lands and the potential for adverse impacts to grizzly bears on BLM lands does exist, adoption of a food storage strategy as required by the RMP will further reduce the probability of conflicts in the future and no reported grizzly bear mortalities or management actions related to improper food storage have occurred on BLM lands within the action area.
- The BLM has made an effort to minimize adverse effects on grizzly bears as shown above through the RMP, past accomplishments, and current management direction and efforts to reduce adverse effects on grizzly bears due to food attractants are continuing.

RMP direction for livestock grazing may result in grizzly bear-human conflicts and grizzly bear mortalities but this will be minimized by the lack of sheep grazing allotments on BLM lands and will not affect survival and recovery of the NCDE grizzly bear population. We do not anticipate that the level of conflict and grizzly bear mortality occurring under RMP direction would increase to a level that would appreciably reduce the likelihood of both the survival and recovery of grizzly bears.

Recovery zones were established to identify areas necessary for the recovery of a species and are defined as the area in each grizzly bear ecosystem within which the population and habitat criteria for recovery are measured. Areas within the NCDE recovery zone are managed primarily for grizzly bear habitat. The NCDE recovery zone is an area adequate for managing and promoting the recovery and survival of the NCDE grizzly bear population (U.S. Fish and Wildlife Service, 1993). The recovery zone contains large portions of wilderness and national park lands, which are protected from the influence of many types of human uses occurring on lands elsewhere. As anticipated in the Recovery Plan, grizzly bears are expanding their range outside of the recovery zone. Grizzly bears outside the recovery zone probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. Considering the large size of the NCDE, land management within the recovery zone, and the status of the grizzly bear population in the NCDE, we do not expect this level of adverse affects to appreciably reduce the likelihood of both the survival and recovery of the grizzly bear.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulations pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission that creates the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by the BLM so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM has a continuing duty to regulate the activity that is covered by this incidental take statement. If the BLM (1) fails to assume and implement the terms and conditions or (2) fails to require an applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50CFR 402.14(i)(3)].

This incidental take statement applies to the effects of access management, sanitation/food storage and livestock grazing under the implementation of the RMP.

Amount or Extent of Take Anticipated

The Service defines harm of grizzly bears in terms of adverse habitat conditions caused by high road densities. Significant avoidance of habitat by grizzly bears can occur when open motorized access density exceeds 1 mile per square mile and when total motorized access density exceeds 2 miles per square mile. The Service maintains that, as a result of access management under the RMP, this avoidance of otherwise suitable habitat constitutes incidental take of grizzly bears through "harm" as a result of significant habitat alteration that disrupts breeding, feeding and/or sheltering.

High road densities and lack of core or secure areas exist across many areas within the grizzly bear distribution area outside of the NCDE recovery zone. The RMP does not preclude additional road construction. The Service believes that it is reasonable to assume that the level of permanent roads in areas outside the recovery zone will not substantively increase in the next decade, with some local exceptions. This assumption is based on the commitments made in the proposed RMP, and the current BLM road system that in many cases is adequate for resource management.

Although a moving windows analysis has not been completed for access management in the action area, we have concluded that a degraded baseline exists based upon high open and total liner road densities and intense human use. Some construction of and motorized use of roads will result from site-specific projects under the RMP and would increase the likelihood of disturbance and displacement in the analysis area. Due to roads and activities in the project areas and new road construction and use allowed by the RMP, the Service anticipates that adverse effects to grizzly bears are likely to cause some low level of impairment of breeding, feeding or sheltering, especially during the spring period.

Under the RMP, temporary roads built for resource extraction such as timber harvest or mining may remain on the landscape for several years and receive a substantive amount of use. Such roads may also impair grizzly bears through displacement from key habitats. The Service expects that temporary roading will occur on lands within the distribution of grizzly bears on the resource area, outside the recovery zone. The Service also anticipates some level of impairment to grizzly bears with home ranges impacted by these temporary roads.

High road densities increase the risk of take of grizzly bears by habituating some individuals and displacing some individuals. However, habituation of grizzly bears is largely a function of private lands and or attractants. Human-caused mortality records for the BLM indicate that habituation on BLM lands is likely infrequent.

The continued implementation of the RMP and related access management would result in take due to displacement of grizzly bears, specifically female bears, from essential habitat. We expect take in the form of harm or harassment as a result of disturbance from roads or from alteration of habitat (high road densities) to the extent female bears significantly under-use important habitat. Such under-use of habitat likely leads to some level of impairment of normal breeding and feeding behavior in females. Significant levels of displacement from key habitats could result in a female bear's failure to obtain adequate food resources, which in turn could result in reduced fitness and either failure to breed or mortality of cubs prior to or after parturition. We do not expect adult or subadult grizzly bear mortality as a result of displacement. We do not expect mortality, injury, or significant impairment of breeding, feeding or sheltering of male or subadult grizzly bears as a result of displacement.

The effects of displacement of grizzly bears from key habitats are difficult to quantify and may be measurable only as long-term effects on the species' habitat and population levels. We believe that incidental take will occur from the effects of high road densities persisting in some areas of the resource area, outside of the recovery zone. However, grizzly bears are individualistic and display a wide variation in their tolerance of and response to human activity and road density. The best scientific and commercial data available at this time are not sufficient to enable the Service to determine a specific amount of incidental take of the grizzly bears due to displacement. The reasons for this difficulty are in part based on the lack of ongoing, intensive grizzly bear research. We lack information related to the following:

- the number of grizzly bears living on the resource area
- the individual response of adult females whose home range encompasses areas with high road densities
- demographic parameters, such as survivorship and fecundity
- detection of loss of cubs prior to or after parturition

The level of take is also difficult to detect. Failure to breed, or loss of cubs prior to or after parturition is exceedingly difficult to detect, and the reasons for such are exceedingly difficult to discern. Therefore, in such cases where take is difficult to enumerate, the Service uses surrogate measures to gauge the level of take. The best available information indicates that female grizzly bears display significant under-use of habitat near roads and areas of high road densities. Research provided a composite home range for female grizzly bears that survived to adulthood to successfully produce cubs. From this home range information, the surrogate measures of OMAD, TMAD and security core were derived to limit, measure and monitor the displacement impacts and resulting level of incidental take. In the action area outside of the recovery zone, based on recent past and planned future BLM projects, we assume that there will be increases in road densities associated with specific projects. These increases will generally be temporary, and post-project road densities will not diverge significantly from the present. This level of roading represents the surrogate measure to limit the take we anticipate from continued implementation of the RMP in regards to access management in the action area outside of the recovery zone.

A food storage strategy will be developed for the resource area. This strategy will further reduce the already low probability of food conditioning of grizzly bears on BLM lands. The BLM has not had any reports of grizzly bear mortalities or management actions towards grizzly bears associated with improper food storage.

The Service concludes that the lack of a mandatory sanitation and food storage requirements across the entire action area outside of the recovery zone may contribute to the habituation of grizzly bears and modification of natural feeding behavior and the resulting removal or death of grizzly bears due to necessary management removal and other human-caused mortality. Until a resource area-wide food storage order is in place, the potential for grizzly bears to have access and become habituated to improperly stored food items on the resource area will persist. Thus, the potential for incidental take of grizzly bears through habituation and food conditioning will remain.

Based on recent trends in grazing, we assume there will be no establishment of sheep grazing allotments on lands managed by BLM. If additional sheep, and to a lesser extent cattle, allotments are filled in areas outside the recovery zone, the level of conflicts may increase and the risk of adverse impacts to grizzly bears does exist. Of most concern are the allotments that become attractants for grizzly bears living both in and outside the recovery zone, and result in grizzly bear mortality sinks. An attractant such as a sheep allotment outside the recovery zone may draw bears from within the recovery zone and affect recovery of the NCDE grizzly bear population. However, there have been no management removals or mortalities of grizzly bears on BLM lands in the Butte resource area due to grazing conflicts.

Although no grizzly bear mortality or management actions have occurred in the action area related to sanitation/food storage or livestock grazing, the Service assumes that the risk for such is likely to increase as grizzly bears continue to expand outside the recovery zone.

We anticipate that no more than one grizzly bear will be removed from the action area for management purposes related to authorizations made under the RMP during any ten year period related to sanitation/food storage and/or livestock grazing. Therefore, should more than one grizzly bear be taken incidentally in the action area as a result of authorizations made under the RMP related to sanitation/food storage and/or livestock grazing during any ten year period, the BLM must reinitiate consultation with the Service. Additionally, should the level of incidental take associated with the RMP reach, but not exceed, the anticipated incidental take level, the BLM should informally consult with the Service regarding the adequacy of existing mechanisms to minimize potential take.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. The BLM is implementing several measures that would sufficiently minimize impacts to grizzly bears. See the proposed action and "Positive Actions toward Grizzly Bear Recovery on the resource area" (above) in the accompanying biological opinion for a list of these measures. Critical habitat has not been designated for the grizzly bear; therefore none would be affected.

Reasonable and Prudent Measures

Biological opinions provide reasonable and prudent measures that are expected to reduce the amount of incidental take. Reasonable and prudent measures are those measures necessary and appropriate to minimize incidental take resulting from proposed actions. Reasonable and prudent measures are nondiscretionary and must be implemented by the agency in order for the exemption in section 7(o)(2) to apply.

The Service believes that the measures displayed in the accompanying biological opinion, specifically in the proposed action and under "Positive Actions toward Grizzly Bear Recovery on the resource area", direction provided in the proposed Preferred Alternative in the RMP the commitment to develop food storage guidelines, and administrative direction on livestock grazing, minimize adverse effects to grizzly bears within the action area. The following reasonable and prudent measure is also necessary and appropriate to minimize the impacts of incidental take resulting from the proposed action:

1. Reduce the potential for mortality and displacement of grizzly bears within the mapped distribution area for grizzly bears on the resource area outside of the NCDE recovery zone.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions that implement the reasonable and prudent measure described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary:

To implement the reasonable and prudent measure:

1. ***BLM will include a clause in all new and revised grazing permits for allotments within the grizzly bear distribution area (U.S. Forest Service, 2002), requiring the permittee to notify the BLM as soon as is practical of any grizzly bear depredation on livestock or conflicts between grizzly bears and livestock, even if the conflict does not result in the loss of livestock. The BLM shall coordinate with Montana Fish, Wildlife and Parks (FWP) and USDA APHIS Wildlife Services personnel to determine appropriate action.***
2. ***BLM will include a clause in all new and revised grazing permits for the area within the grizzly bear distribution line (U.S. Forest Service, 2002) requiring the permittee to properly treat or dispose of livestock carcasses as deemed necessary on a case-by-case basis by BLM in coordination with USFWS, so as to eliminate any potential attractant for bears. BLM will include guidance to permittees to contact FWP if they need carcass disposal assistance.***

Reporting Requirements

3. ***The BLM will maintain an up-to-date record of the grizzly bear conflicts and management actions that occur on lands managed by the Butte Field Office. "Conflict" is defined by the IGBC (1986) as "a confrontation between man and/or his property and bear(s) in which the safety of man and/or bear(s) is jeopardized and/or property loss occurs." This information shall be submitted to the Service's Montana Field Office in written form annually by June 1 for the preceding calendar year.***
4. ***The BLM shall notify the Service's Montana Field Office if a change in the status of sheep grazing on the resource area is being considered if the change could increase sheep grazing in or adjacent to occupied grizzly bear habitat. Changes that increase sheep grazing include increased sheep AUMs in established allotments or conversion of cattle allotments to sheep.***
5. ***The BLM shall notify the Service's Montana Field Office, within 72 hours of discovery of any livestock depredation by grizzly bears, grizzly bear-human conflict resulting from improper storage of food or attractants or the management removal or human-caused death of a grizzly bear.***

Closing Statement

The Service is unable to precisely quantify the number of grizzly bears that will be incidentally taken as a result of the implementation of the Butte RMP. Based on the commitments made in the RMP we anticipate that adverse effects of BLM actions will continue to decrease over the life of the plan. We also anticipate that no more than one grizzly bear will be removed from the resource area as a result of authorizations made under the RMP related to sanitation/food storage and/or livestock grazing in any ten-year period. Reasonable and prudent measures, with their implementing terms and conditions, are typically designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, the Service believes that the level of take occurring exceeds that anticipated in this incidental take statement, such incidental take represents new information requiring reinitiation of consultation and review of the incidental take statement. The federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Sections 7(a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species.

1. Participate in ongoing interagency efforts to identify, map and manage linkage habitats essential to grizzly bear movement between ecosystems. Much of the resource area may be an important link to the Bitterroot Ecosystem, Bitterroot National Forest, the Beaverhead-Deerlodge National Forest, the Helena National Forest, and the Yellowstone ecosystem. Please contact the Service's grizzly bear recovery coordinator at (406) 243-4903 or Montana Fish, Wildlife and Parks for information.
2. Continue to manage access on the resource area to achieve lower road densities. By managing motorized access, several grizzly bear management objectives could be met including: 1) minimize human interaction and potential grizzly bear mortality; 2) minimize displacement from important habitats; 3) minimize habituation to

humans; and 4) provide relatively secure habitat where energetic requirements can be met (Interagency Grizzly Bear Committee 1998). Additionally, lower road densities would also benefit other wildlife and public resources. Lower road densities may result in lower maintenance costs that free up funding for other resource needs.

3. Grizzly bears concentrate in certain areas during specific time periods to take advantage of concentrated food sources or because the area provides a high seasonal food value due to diversity in vegetation and plant phenology (e.g., important spring or fall range). Where grizzly bear use is known or likely to occur and where practicable, delay disturbing activities during the spring in spring habitats to minimize displacement of grizzly bears.

REINITIATION NOTICE

This concludes consultation on the action outlined in your May 25, 2006 request for consultation on the effects of the Butte RMP on grizzly bears. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The incidental take statement is based on the implementation of the RMP management activities, including the minimization measures described in the biological assessment, the RMP, special orders and administrative decisions; as well as effects analysis of this biological opinion. To ensure protection for a species for which surrogate measures are used to gauge the level of take due to activities related to the continued implementation of RMP activities, reinitiation may be required if the terms and conditions are not adhered to or the magnitude of the proposed activities exceed the scope of this biological opinion. Determination of reinitiation of consultation pursuant to the Act will depend upon the nature and extent of noncompliance with the implementation of RMP activities, and the terms and conditions of this incidental take statement, and may result in loss of take exemption from the prohibitions of section 9 of the Act.

Thank you for your continued assistance in the conservation of endangered, threatened, and proposed species. If you have any questions or comments on this biological opinion, please contact myself or Anne Vandehey of my staff at 406-449-5225.

Sincerely,

R. Mark Wilson

Field Supervisor

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